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ORIGINAL ARTICLES.

A FEW PARAGRAPHS ON AFFECTIONS OF THE LACHRYMAL APPARATUS.

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It will be apparent to any one who is at all familiar with the anatomic conformation of the lachrymal passages, that certain shaped appliances fashioned from a practically unyielding metal, under the name of lachrymal probes, do not meet the requirement for the purpose they were designed.

We have evidence at every hand of the great injury following the passage of the probe, and the difficulty of effecting a cure for obstinate cases of epiphora, due to obstruction of the lachrymal canal.

The "slitting up" or destruction of the punctæ and canaliculi, for frequent probings, the indiscriminate "plunging" and "twisting" of a bistoury or a sharp double-edged Graefe cataract knife into the tissues of the nasal duct, the application of caustic, tissue-destroying agents, have not only signally failed to effect a cure but, in the majority of cases, have entailed future discomfort and irreparable damage, with little or no permanent benefit to the patient.

Disease at the worst can only destroy tissue.

What is needed in an inflamed mucous membrane, with a hypersecretion of mucus and pus, is something that will coagulate albumin; coagulation of the discharges, taking care to keep the processes in operation for a short time, carefully and frequently removing the coagulated matter, will not fail to arrest the progress of the disease.

The patency of the lachrymal passages is as essential as that desired in the urethral canal, and in some particulars the environment of the lachrymal apparatus requires a perfect condition for the performance of its normal functions.

Simple obstructions from catarrhal inflammation require only a little care in the toilet of the lachrymal apparatus.

When the tears begin to flow through their natural conduits, and are poured out in the right place, in quantity suitable to the need, their useful and multiple office is performed in a way so simple and perfect that no art, however skillful, could equal it; no antiseptic lotion is as free from extraneous particles, or holds in combination better remedial agents than this secretion; why, then, practice meddlesome and needless interference? We will find by careful inspection that preëxisting catarrhal inflammation in the nasal fossæ is responsible, in a majority of instances, as the original cause of the trouble in the lachrymal canal; its extension is easily facilitated owing to the continuity of structure.

An ordinary Schneiderianitis has been known to produce more or less discomfort of the patient, by the further involvement of the mucous membrane lining the lachrymal canal, not only affecting the inferior end of the nasal duct and sac, but extending to the canaliculi, through the punctæ, producing irritation in the ocular and palpebral conjunctivæ. In obstruction of the lachrymal passages due to inflammatory disturbances, the palliative or antiphlogistic plan of treatment should obtain. Filling the nasal angle of the orbit with warm saline, or saturated solutions of boric acid, the gentle massage with the fingers of that part of the face over the nasal duct and sac, so as to afford sufficient aid to effect irrigation and drainage into the nose will, in the majority of cases, bring about a cure; and sometimes, if this simple plan of treatment be adopted in chronic inflammation of the sac, in conjunction with proper attention to the nasopharynx, no other treatment will be required, save in debilitated subjects.

Chronic inflammation of the lachrymal sac, or chronic catarrh, is of frequent occurrence. The symptoms are well known and need not be detailed here. In the normal condition, the lining membrane of the sac secretes only a little thin mucus, but when irritated, the quantity of the fluid becomes increased, and its quality changed; the sac becomes distended, and on pressure a clear and thick viscid fluid exudes in many instances through the canaliculus. According to some, pus is rarely seen unless there is some untoward irritation (such as may be produced by the laceration of the membrane by injudicious probing), causing ulcerations of the membrane.

As a rule, there has been some chronic inflammation preëxisting in the lower part of the duct and nasal fossæ, in most cases of chronic inflammation of the sac; this having led to the contraction or closure of the inferior orifice of the canal, and to this region must the treatment be directed.

We have now to select a plan of treatment for the removal of the cause of the trouble. By directing our efforts toward the original catarrhal condition involving the nasal fossæ and lower orifice of the duct, and the introduction of solutions of boric acid, euthymol, hydrastia, hydrozone, papain (and, should occasion require it, the 1 to 5,000 bichlorid solution carefully instilled), using an Anel's lachrymal syringe for the purpose, by gently inserting the nozzle through the patent canaliculus into the sac.

Care should be taken to avoid over-distension of the sac; this can be readily accomplished by emptying the sac at frequent intervals of the fluid injected.

Another method of treatment, and one which can claim prestige for a quarter of a century or more, and has never been known to vary in any particular (save recently the addition of cocain, that the patient may be rendered insensitive to pain), and is employed by many surgeons up to the present time, may be correctly described as follows:

The inferior canaliculus is "slit up," a metal probe is then passed down into the duct until it reaches the inner wall of the sac, often with great difficulty and the employment of much force; the patient complains of severe pain, a little blood appears, as the mucous membrane has been torn, and perforation of the membrane follows and false passages are made.

A week elapses and the same performance is repeated, and goes on from week to week, with some form of a style, it may be of gold, silver or other metal, yet they fail to prevent the formation of dense cicatricial strictures in or below the sac; obliteration or destruction of the lachrymal sac with caustics accompanies this method of treatment.

An opening made externally through the skin down to the sac, affords better facilities in the treatment, and possesses many advantages over the passage of a probe; a clean incised wound in this location heals quickly and kindly, and the inflammation rapidly subsides.

In cases of obstruction of the nasal duct where there has been abscess of the lachrymal sac, occurring, as it frequently happens, by inappropriate, or absence of treatment, it is not uncommon to find external fistulous openings just below the inner canthus. The openings may be small or almost invisible, or at least surrounded by an ulcerated area.

In such cases it is sometimes sufficient to cure the obstruction of the nasal duct — the fistula healing without treatment; more frequently, however, further operative procedure is essential to the cure.

Formerly, it was considered good practice to pare the edges of the fistula with a fine scalpel, but this procedure often results in a visible and unpleasing cicatrix in a conspicuous part of the face.

It has been my custom, for some years past, to use the Volkmann's scoop to scrape away all unhealthy and thickened tissue that may be in propinquity to the fistulous openings and apply a pad of dry (sublimated) lint, or distilled water dressings.

When the surface to be scraped is small, this is usually followed by rapid healing without a visible scar; when the surface is large, it is customary to wait a few days until the surface presents a red, granular appearance, and then proceed to graft certain minute portions of the skin taken from the patient's arm or elsewhere.

These grafts spread out, and become a center of new skin growths, to meet the in-growing circumference of the patch, and usually in one week's time from the grafting, the surface will be found to have kindly healed, with only the slight redness which is natural to new tissue.

These grafts grow rapidly, and thus materially assist in preventing the contraction which otherwise follows the healing of a wound; by covering the wound with gold-beater's skin the new growth formation may readily be observed, and the scraped surface protected from noxious atmospheric influences.

The canaliculi are occasionally obstructed with concrements of micrococcus masses that appear to have found their way into the lachrymal canal from their "home" in the buccal, naso-pharyngeal and laryngeal cavities. The leptothrix buccalis, the chain and spiral cocci, the streptothrix and pneumococci, have been found in the lachrymal canal; this canal has ever been a source of danger to the ocular and corneal conjunctivæ, as the starting-point for morbid growths—of which we may include pterygium rather than the acceptance of the internal deep-seated vibrio theory—dangerous perforating ulcers of the cornea and suppurative processes that have, in a number of recorded cases, caused destruction of the eyeball. The lachrymal canal is a fruitful source of infection, and frequently transforms the best of operative procedures into disastrous failures.

No surgeon should neglect to carefully inspect the naso-pharyngeal and lachrymal passages, and see that morbid secretions in these passages are removed and the passages rendered aseptic, before operating upon the eye. When therapeutic measures, after a fair trial, have failed to remove the obstruction, so as to admit of proper drainage of the lachrymal canal, the introduction of flexible rubber filiform bougies, the Eustachian bougie, catgut and silkworm-gut ligatures, or electrolysis may be resorted to.

There can be little doubt that a certain proportion of cases of obstruction indicate a specific origin; the local treatment can be readily merged into the constitutional. Should tumors, dacryoliths, deformed turbinates and morbid growths appear, the therapeutic local treatment will in no way interfere with the adoption of any surgical measures that may be required.

Electrolysis is more expeditious and free from danger, and complications are almost *nil*, when compared to the passage of probes, the wearing of various forms of tubes or styles, nitrate of silver and other caustics and powerful astringents.

By electrolysis, the site of its influence can be limited to the smallest point. The duration and extent of its decomposing action is entirely under the direction and control of the operator.

The material to be decomposed by electrolysis in stenosis of the lachrymal canal is not dense, and does not offer great resistance, and therefore a battery composed of a small number of cells is sufficient. A galvanometer, however, is required for the purpose of measuring the current, for different batteries have a different electro-motor force; a difference also exists in cells which have been recently charged, or which have been in use for a long time.

Two to four milliamperes will be found a sufficiently strong current to enlarge any narrow lachrymal canal. For stenosis of the lachrymal canals, a probe made of platinum, small enough to be inserted into the punctum, is introduced and passed along the canal to the nasal duct; the probe is fitted into a handle, which is attached to the negative pole of the battery. A flat electrode, covered with some substance that will retain moisture, is connected with the positive pole, which generally is placed on the back of the neck, having been first moistened with salt water. The handle of the negative electrode has a mechanism for completing the circuit.

With four milliamperes the enlargement of the canaliculus takes place in thirty seconds; no local anesthetic is required.

In a few seconds after the circuit is closed the probe, which was at first gripped tightly in the canal, can be made to move backward and forward along the canal with ease.

During the operation, a little froth collects by the side of the probe and oozes out of the punctum; this, with a sharp stinging sensation, which lasts thirty seconds, is the only discomfort the patient has to endure.

The advantages attending this procedure are chiefly due to the fact so little alteration or displacement of

the normal channels is effected. By it we have the means of increasing the lumen of the punctæ and canaliculi without excessive stretching, which must necessarily alter the conditions of the surrounding muscular and other structures.

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MATERNAL IMPRESSIONS.

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The definition of maternal impressions is that a profound and sudden impression made on the mother's mind may pervert or stop the growth, or cause defect in the child with which she is pregnant.

Maternal influences over the young have been recognized from the earliest history of man. The thirtieth chapter of Genesis gives Jacob's policy whereby he became rich. He pilled the rods of green poplar, hazel and chestnut and set them before Laban's herd and by maternal impressions he colored enough of the herd in ten or a dozen years to become rich.

And the next chapter tells us of Rachel's influence over Joseph and Benjamin to impress the race of mankind.

While this force has been recognized among all nations of people, it is only in the last few years that an attempt has been made to separate the truisms from the superstitions on this subject. In fact if you wanted the greatest superstition for ages, the one on maternal impressions would linger to haunt the members of each new generation.

There are two classes of defects which have been attributed to these impressions: The perceptible or bodily deformities, and the imperceptible or mental defects. First, the perceptible or bodily defects, we will verify by a few well authenticated cases:

I attended a multipara mother a few years ago, who gave birth to an akephalous fetus. The head of the child had no bones at the side and top part of the cranium. The top of the head was even with the superciliary ridges and auditory meatus, showing total absence of a cerebrum. The scalp was complete and well covered with hair. The child was well formed and above the average in size. It was stillborn. The mother believed the cause of this to be the caring for a sick dog while she was in the third month of pregnancy. But Prof. Rudolph Virchow of Berlin, thinks that these cases are the result of hydrocephalus.

Dr. Joseph Haven reported the following case to the Chicago Medical Society, Dec. 9, 1895: "Twelve or fourteen years ago I was in attendance upon a family in this city, one of whose members was a little girl 8 or 10 years old, extremely nervous and high strung, who possessed an uncontrolable fear of dogs. Anything in the canine race, even the picture of a dog would distress her. Her mother, explaining the matter to me, said that while carrying the child *in utero* she had been frightened by a dog, and that the girl had inherited that fear. As the child grew older she did not outgrow that tendency. During an attack of typhoid fever, in her delirium she had frequent visions of dogs, so that it was often necessary to employ narcotics to quiet her. The child grew up and was married, shortly after which she became pregnant. About the sixth week of pregnancy I was sent for in a hurry. I found Mrs. D. hysterically excited. I was told that in going out of the yard a neighbor's dog jumped upon her and terribly frightened her. She was put to bed, began to flow, and a miscarriage seemed imminent. But she was tided over. I saw her daily after that for some time. She assured me that her child would be marked like a dog. I tried to disabuse her mind of this idea. Time went on and about the third month the same dog jumped on her again and bit her in the foot, inflicting a slight lacerated wound. It was some time before I could go to the case and when I reached the house a miscarriage had just taken place. I took possession of the fetus, being careful that the mother should not see it. On account of the peculiarity of the specimen I secured the dog that had been the occasion of so much trouble, and to-night I show you the skull of the dog which I would like to have you compare with the little monster. Those who believe in the transmission of maternal impressions will get some consolation from examining these specimens, and those who believe such results happen as mere coincidences will have to account for this freak as best they can."

Here is a case that occurred in the practice of my colleague, Dr. J. C. Sutherlin of Ladoga. This case differs from any that I have known or read of, the impression being caused by an act of anger on the mother's part. At about the fourth month of pregnancy she was insulted by a minister. She was getting a meal at the time and was in a perfectly good humor, but happened to have a large knife in her hand. The minister had his right hand, palm down, resting on a table. The insult was unexpected and made her so intensely angry that she struck at his fingers with the knife, fully intending to cut them off, which fortunately missed the culprit and left him unharmed. A female child was born with the ends of the fingers amputated on the right hand, the same hand the mother used in striking.

One of the most striking cases reported is that of Dr. Addenbroke, *British Medical Journal*, May 13, 1871. "Two women, sisters, both at about the third or fourth month of pregnancy, were assisting their mother, who was an invalid, to night stool, when she was suddenly paralyzed on one side. The daughters were greatly shocked, and at full term each gave birth to a child with facial paralysis on one side."

We could go on and multiply cases well authenticated showing how these impressions have marked the skin, pierced holes in the ears, maimed and deformed the extremities, injured the arterial and nervous systems, indeed, caused malformations in every organ and part of the body.

Professor Rokitansy, the great pathologist, says that mental emotions do influence the development of the embryo. He also refers to the frequent anomalies of vascular system caused by them.

The period of pregnancy is most liable to impressions for bodily defects in the third and fourth months. There may be an excess as well as an arrest of development. Some of the imperceptible or mental impressions are very hard to discriminate from certain hereditary traits. Now, there is no doubt that sudden or prolonged impressions on the mother's mind will cause bodily defects. How easy it would be to derange the soft pulpy brain structures with its thousands of delicate cells and pervert their action for future use, thus giving us more evidence for charity to our weaker members of society. How well I remember this statement from an intelligent, proud society woman of Crawfordsville. She raised two boys and they were both affected with alcoholic dip-

somania. One studied law with Lew Wallace, who said he possessed a bright mind and was gifted with oratory. The other was a most efficient clerk and salesman. They spent a fortune and both died a premature death, slaves to their appetite. This mother told me, with tears in her eyes, that she could never blame the boys like others, for she craved whisky while carrying both of them, till she would weep with agony. The father was an excellent man morally, and accumulated a fortune by his own work.

James I. would pale at the sight of a drawn sword, alleged to have been caused by his mother, while pregnant, seeing Rizzio cut down.

One of France's bravest generals, whose courage Napoleon said was the best, became pale and tremulous when he saw a sword, caused by his father in a fit of jealousy trying to kill his mother.

The following is what the *Commercial Tribune* says about the child murderer, Carl McElhinney of Dalton, Ohio: "The question, is the boy morally responsible, remains unanswered. Half a dozen physicians of this and the surrounding towns have labored in vain to solve the mystery of Carl McElhinney's peculiar brain. At a consultation of two physicians, it was decided that the child murderer was not, and is not, mentally deranged. Further facts, however, were not established. Dr. H. R. Bittern, one of the examiners, propounded a theory based on anterior conditions. Said he: 'This is only a theory, and is presented merely to help a solution of the mystery of the mental condition of seven-year-old McElhinney, and is not to be taken as my final conclusion. I have some belief in the inheritance of mental idiosyncrasies. Both Mr. and Mrs. McElhinney were of sound and healthy mind. However, at and before the birth of Carl, I believe, Mrs. McElhinney's mind was not in an easy, natural and normal condition. This might account for Carl's singular mental formation. Before Carl's birth Mrs. McElhinney was an assiduous reader of novels. Morning, noon and night her mind was preoccupied with imaginative crimes of the most bloody sort. Being a woman of fine and delicate perception, she appreciated to an extent almost equaling reality the extravagant miseries, motives, villainies set down in novels, so that her mind was miserably contorted weeks before the birth of her child Carl. The boy was an abnormal development of criminality. He has a delight in the inhuman. It takes intense horror to please this peculiar appetite. Murderer Holmes was such a being, but even he did not show his tendencies before maturity. I believe criminal record does not show a case so remarkable as this. As the boy matures these mental conditions will mature. He is dangerous to the community, and I doubt that even a severe schooling in one of our severest reformatories would better his condition. However, by all means, he should be sent to one."

Wars or any tumult in society that may excite fear, anxiety or grief in pregnant women are dangerous. The instance of idiotic and stillborn children to the number of one hundred being born near the great siege of Landou in 1793, proves this.

We, as scientific physicians, who Dr. Victor C. Vaughan says are one hundred years in advance of the politician, should teach our patrons how to care for our pregnant women, and the danger from maternal influences. The Spartans bred warriors, and I believe this generation can breed a better people. One of the future advances to help the generations to come, will be to teach them the power of maternal influences, with better care of our pregnant women. This, with a proper knowledge of the dangerous hereditary diseases in marriage, will strengthen the human race.

EVOLUTION OF GIRLS.

Read in the Section on Diseases of Children, at the Forty-seventh Annual Meeting of the American Medical Association, held at Atlanta, Ga., May 5-8, 1896.

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The question whether man has ascended from the monkey or descended from "a little lower than the angels" does not matter in the present discussion; also whether women have passed to a higher or lower plane in the evolution of our higher woman; whether it is a higher sphere to wield the keen, logical brain of a Maria Mitchell or to be the mother of a host of well trained sons as Cornelia, is not pertinent to the present subject. For the reason that popular opinion, before which we all fall prostrate, says woman's brain, whatever its capacity, must be made to hold a certain amount of book lore which we call an education. Sometimes when we have this erudition applied we think with the poet, "Knowledge comes, but wisdom lingers."

"Go on to perfection" is the motto written above every scientific laboratory door; and one of the most weighty problems for the scientists now to solve is, how can the little tiny mite of brain force, which has just given its first feeble wail of protest against the tremendous activity of the nineteenth century, be evolved into the vast intellect which she must have when she becomes a higher women, with the least loss of nerve force?

The majority of our women are the victims of nerve exhaustion. How can it be prevented? If child nurses can only be taught to watch the promptings of nature and assist her in her work the task of developing infancy into perfect womanhood would be a comparatively easy one. But the mother usually wastes all her nerve energy in useless repining from the time that she believes a new spark of life has been kindled until the anguish she dreads has been endured, or she is spending it in a vain effort to have a perfect child. One of our very highest women, a university graduate, said to me when I was called to prescribe for her three-weeks-old baby, "I was so anxious to have my child well born that I studied and practiced every detail of diet and mental gymnastics laid down in tokology and several kindred works, but I almost died when baby was born, and here he is, as you see, continually unhappy. He has been fed at the breast under the guidance of a trained nurse recommended by my physician, and her regimen has been very exacting. The only time the child seems comfortable is when he is disrobed for his bath, although the clothes have been made and are worn according to the directions sent out by one of the largest sanitariums in the country." "Well, my dear madam," I replied, "you were so anxious to have your child well born that he has gone clear back to the state of primeval innocence of the Garden of Eden. If you had rested your brain by pleasant reading, eaten what was wholesome and nourishing, in reasonable quantities at accustomed times, and then allowed nature to care for it without spoiling her work by torturing yourself with imagining that the food would injure you or

your child, and had kept your physique in good condition by light, agreeable exercise, most of it taken in the open air, or, as a résumé, taken life easy and trusted in Providence, you might have stored up sufficient nerve force to have made your labor more easy and your child would certainly have been in as good condition as he is now; and my experience says he would have been in a better condition than he now is."

The purpose of this article is not to call attention to the clothing and diet necessary to develop healthy girls, but to point out some of the things which have been overlooked in their evolution.

We will now glance at some of nature's indications for development. The cells which control the higher attributes are located in the anterior lobes of the brain, while those which control the animal functions of the digestion and motion are in the posterior or central part. The natural mechanism of labor compresses the anterior lobes into the smallest possible space, while the other lobes undergo less pressure. This is made possible by the largeness of the anterior fontanelle as compared with the posterior. In this way nature takes care of what is necessary for the child, and in other ways provides for future development of the higher attributes. Modern scientific investigation teaches that for the first few years of life the brain can be changed and the different attributes helped or hindered in their development. Brain material, like everything else, must have room to grow and there can be no growth in a part that is compressed. It is easy to tell in almost every child, when a few months old, by the shape of its head if it has been kept a very long time in one position. The side or part upon which it has been lying will be flattened. Nature teaches that a girl is first a pronate, then a four-footed, after which she becomes an erect animal. If the girl is allowed to follow the dictates of nature the higher brain will develop as she slowly evolves from one type to another. But here our civilization steps in and instead of allowing the embryo woman to develop along nature's line and be allowed to squirm, kick and roll through early infancy, she is forced into all manner of unnatural positions by pillows and props. As our girl is not allowed to develop the front brain naturally, we must instruct our nurses to assist the development by frequently placing her pronate with the head lower than the chest. This can be done by placing the child across the knees of the nurse with the head projecting beyond and hanging slightly down. This is the position which colicky babies so much enjoy. Perhaps colic is due to the blood being in the abdominal viscera when it should be developing the higher attributes of the brain; hence the relief when it is sent where it belongs.

The more cultured the family into which our girl is born the less she is allowed to take the exercise intended by nature for her proper development. From birth she is held in as nearly an erect position as possible and propped into a sitting posture by pillows and that instrument of torture, the high chair, in which so many weary hours of childhood are passed. I frequently find little girls who have never resumed the recumbent attitude, except when asleep, since infancy and the mother says with pride, "my little daughter never crept like common girls." We hope in the future we will have more "common" girls. When the child is sleeping she must be crowded around with pillows for fear she might attempt to use her muscles and roll over and give an ungraceful kick when the nurse is not by to curtail the movement. As soon as possible baby is placed upon her feet and encouraged to walk to show how smart she is. This craze for smartness is the curse of this age.

In girls the evolution from one type of animal to another should be made slowly, not alone to give the higher brain a chance to develop by the pronate posture and the position required in creeping, which makes the anterior lobes the most dependent part, but also that the uterus and its ligaments may be properly developed so that they may stand the strain brought upon them when the girl assumes an erect posture. From my study of the development of the uterus I expect and have demonstrated by examination, that a girl who has never learned to creep has a flexed or infantile uterus. In creeping, the pelvis being higher than the chest, the force of gravity carries the intestines toward the diaphragm, and in this way pressure is removed from the undeveloped uterus and it unrolls and assumes the normal position. A girl naturally creeps a little space, rises to her feet by some object of support and then drops to her hands and begins creeping again, in this way alternately relaxing and stretching the uterine ligaments. Could there be a more perfect way to strengthen ligaments of any kind.

But our evolution has carried our girl through the necessary kicking, rolling and crawling of infancy, on the floor in winter and out of doors in the sand pile or on the seashore in summer, to girlhood. She has not been kept in one position long enough to allow compression of any organ, and if for any reason there seems to be a lack of development anywhere we have used all means, by posture or otherwise, to send a good supply of blood to more fully nourish the weak part.

We do not now seek to unduly develop the brain to make her brilliant, as force-plants are short-lived, but we urge her to rival her brothers in all out-door sport which will develop vigor of limb and strength of muscle, then she is as nearly fitted as possible to enter the high school, to go through the cramming, jamming process to reach what we call an education. This process crushes out the lives of many of our sweetest and best girls; but no matter, our school system must be preserved at any cost.

Our evolution has developed our girl into such a little perfect animal that she may endure (although I wish it were otherwise) the strain of sitting on a bench at a desk for long hours to have crowded into her brain material which must be jammed out again, because, forsooth, the brain is not large enough to contain it all; and in the haste there is not time for each cell to grasp the part which it should store, before more is given it to do. Occasionally we find a child whose brain will store all given it, but in most cases it is a dismal failure.

Can not some social economist evolve a plan by which the brain can be fed and developed to think and reason without this great waste of nerve force? Counting this loss alone the cost of our school system to the State is something enormous, and not in any way commensurable by the results attained. But if our girl must go through this grind she must be prepared for it in the best way possible.

To supply the higher brain so that it may not suffer unduly we must suppress other nerve activity. A great deal of nerve energy can be economized by delaying the evolution from girlhood to womanhood.

This can be done by proper hygiene and medication. All sensational literature should be excluded from a girl's library.

Girls should become accustomed very young to cold plunge baths. A few minutes' rest after returning from school, lying down with the pelvis on a higher plane than the shoulders, or in the knee-chest position, minimizes the effects of the prolonged sitting in the school room. Plenty of vigorous exercise in the open air is needed to expel the school room dust and carbonic acid and invigorate the blood by the deep draughts of oxygen, which spirited exercise carries into the remotest recesses of the lungs. We see no reason why race running, rowing contests or ball playing should be given over to the boys. In these the element of contest adds more vigor to the game, but in school contests which bring the girls at an early age before the footlights there is no compensation for the undue excitement, and therefore is to be deplored. If military drill is beneficial to the boy, then it is doubly so to the girl, as her organs sustain more injury if she does not walk right and carry herself properly, and the girl is in more need of the discipline, as one of the evils of the present method of girl-raising is the absence of control. Bicycle riding is yet too new an experiment for us to fully determine whether it would be beneficial to growing girls or not. We think it might be if taken in moderation and proper position, but it must be injurious if carried to excess or taken in the stooping position with an improperly arranged saddle. We can see how it may be beneficial in developing self-control. Girls are allowed to think it womanly to scream and become hysteric at every trivial incident. If learning to ride a bicycle will correct this it will have done a grand good work.

Medication: If the lassitude and indisposition to work, with the wearing pains which sometimes accompany the evolution from girlhood to womanhood, begins to appear, then use calmatives such as viburnum prunifolium, cimicifuga racemosa, and above all I have found helenin, the alkaloid of inula helenium, especially valuable in controlling erotic excitement. Above all teach the mother that it is not necessary for her little immature girl to be subject to this nervous strain every month, but that it is necessary that she be kept strong and well.

DISCUSSION.

Dr. C. G. SLAGLE, Minneapolis—If the advice of that paper were heeded we would have fewer delicate girls. Too much novel-reading, too much "culture and refinement," as they call it, causes too great strain on the nervous system. There should be very little difference between the sports or pastimes of girls and boys up to the age of 10 or 12. Until then the girls should be allowed more freedom, within proper limits, than they usually enjoy. Their nervous system should be better protected. This thing of forcing babies to be smart, forcing development, intellectual development especially, is certainly very dangerous. I think there can be no question that if most of our nervous, weakly girls could be induced to use the bicycle in moderation it would be very beneficial. The best article upon this subject was written recently by a celebrated doctor of London. He contends, bicycling in moderation, with the proper saddle, in the erect position, is beneficial to most and particularly to delicate women. In Minnesota, the climate of which is generally considered very healthy, we have considerable chloro-anemia. I find from the history they are too passive, have been pampered and petted too much, allowed to have their own way and not given exercise. Their energy is gone, if they ever had any, so you can not induce most of them to ride the bicycle. They want to lie in swings and read light literature. Their is something about higher civilization particularly enervating to girls.

Dr. EDWARD H. SMALL, Pittsburg, Pa.—If any of your patients, particularly girls, speak to you about bicycling, tell them to always have the handles at least two inches higher than the seat, then the rider can not lean over. Tell the girls to keep their arms well back and then their chest can not be hindered in development. In Pittsburg most of the girls ride bicycles, skate, etc., and chloro-anemia is not frequent.

Dr. A. C. COTTON, Chicago—I have not thought before of the children developing the anterior lobe by creeping on the hands and feet. Often the baby is undoubtedly relieved of some discomfort by being laid over the knees with the head dependent. Yet you know you can hold the baby to the shoulder and by applying pressure over the abdomen the pain will be relieved.

Dr. HARRIET E. GARRISON, Dixon, Ill.—I hoped to be able to present some photographs of children I have been developing along this line. They have very well developed heads. This should not be overdone, but there is certainly a great deal in the position of the child in early life.

HIGH PRESSURE PROCESS OF TEACHING IN OUR PUBLIC SCHOOLS CONSIDERED FROM A MEDICAL STANDPOINT.

Read in the Section on Diseases of Children, at the Forty-seventh Annual Meeting of the American Medical Association, held at Atlanta, Ga., May 5-8, 1896.

BY W. H. SHORT, M.D.

LA GRANGE, IND.

There are different temperaments and organizations in our school children, and of necessity it would be impossible to adopt any method of teaching that would reach all in a satisfactory manner; no one course or routine would be perfectly satisfactory to the highly nervous child and apply equally to the lymphatic and sanguine temperament. But we ought to be able to so conduct our schools that we may do the greatest good to the whole number.

Our present school system is a high pressure process with a constant tendency to add more branches, so that little children have five or six studies and with department method, as many teachers. Children of eight or nine years of age are urged to high intellectual effort and are expected to master studies which a few years ago were only attempted by children fourteen or fifteen years old. Are we thus doing the best for the coming men and women?

We have certain unmistaken effects among our school children, and there must be a cause. Who originated such an elaborate course and what was the object?

It evidently was not by those who were competent to judge of a growing child's endurance. Writers and publishers of our text books are influencing our legislatures to inflict such herculean tasks upon the youth of our land. We readily see why this course is being adopted so generally. Shall we stand idly by and allow the children to be thus wrecked mentally and physically?

Can a little child study five or six branches and comprehend them? And if he can not and is oversensitive, will it not affect his nervous system and secondarily his whole organization?

Can the scholar develop into a well organized being by thus overpowering the child with so much brain work? We have often observed this trying ordeal among the nervous class, during monthly examinations; the scholar becomes restless at night, fails to take sufficient nourishment, becomes constipated, complains of

being tired with a constant headache which in its incipiency, is generally relieved by rest and out-door life. There are many causes in and out of the school room which have a tendency to increase certain diseases, but our present school system increases nervous diseases with all their horrors, often worse than death, and often close in the wake of disordered nervous systems follow tuberculosis which ends the school work of many who promise so much in early life.

The highly sensitive are in great danger from overwork, while those less susceptible do not worry and thus retain their balance, recuperate and throw off influence of school and studies, as soon as at play. How different with the nervous child, who when overtaxed can not throw off anxieties and is constantly expending his nervous energy. We first have slight ailments to treat, but soon the child does not recover from his trouble so easily. The headache becomes more persistent until we finally have congestion of brain, epistaxis, increased digestive trouble with more or less anemia. With the child thus affected his work becomes more irksome and he now requires urging to keep up with the classes. Repeated attacks soon produce a weakness of blood vessels and nerve centers so that slight causes precipitates one of these attacks.

Such children soon become restless and emotional and easily excited or depressed. The girl is now in a condition to be easily afflicted with hysteric trouble which we have so often seen as a climax of school pressure; and the boy thus goaded on does not fare better, for he is in danger of resorting to habits that endangers soul and body.

There can be no doubt that when the sensitive are thus over-worked, we frequently have the epileptic trouble developed. Even if we do not have such serious trouble follow, many are so affected that they are unhappy and unable to compete in life's great battle. Many of our school children are obliged to wear glasses and this is largely due to this same high pressure process.

The eye must have rest, and the child who is compelled to work hard during school hours and until late at night can not thus accommodate it. Thus, not only one organ or function becomes involved by this great strain upon the developing child but every part of the organization is not only endangered but many valuable lives sacrificed in order to satisfy a false delusion called education. With the present tendency to keep adding more branches each year to our course of study we will have more irritable brains to treat with all its sequelæ.

Have any of our really great and strong men or those who have achieved greatness been thus educated? Some of our greatest men only had a knowledge of the common branches, until well matured, and with some practical knowledge of life, a good physical organization and an abundance of good common sense were enabled to honor the highest positions that fame and fortune could willingly and justly bestow.

The present over-pressure process of teaching is having a deleterious effect on our school children in many ways. Not only is disease thus produced directly but we are injuring their reasoning powers in not allowing them to develop into strong physical beings. A child thus overtaxed may arrive at manhood, or womanhood but will never be able to compete with those who are allowed to develop mentally and physically co-equal. The child who is carefully taught only such branches as his mind can comprehend, and new studies undertaken only when he is competent to understand them will, other things being equal, accomplish more in the literary world or achieve greater success in other spheres of life. He will be saved untold suffering and not become a burden to our commonwealth. If we continue to crowd our children through the public schools without reference to their physical or mental ability we must increase our burdens, for many are drifting into our public institutions for treatment.

If we do not call a halt some will have to seek knowledge in schools for the blind, others find refuge in our asylums for the insane, while we will be obliged to establish an institution for a class of nervous individuals who will become so vacillating and unbalanced, that society will not tolerate them.

We are having more cases of acute tuberculosis among those who are lowered in vitality by this over-pressure. They can not resist or throw off ordinary diseases as they ought. As we observe so many falling by the wayside, unable to complete a satisfactory common school course, owing to our present mode of teaching, we are assured our system is too complicated and obscure, and should be so remedied that all may be enabled to take a course that will fit them for the ordinary vocations of life.

Our teachers should be men and women who understand human nature and be able to develop the scholars' faculties without promise of reward or menace.

The child who is always on a high tension from such influences can not do good work mentally and is injured physically. If this high pressure process continued through the growing child's education, it must cause a great sacrifice to our coming men and women. While if our school children are developed by a judicious course they will attain the greatest success in the various vocations of life.

As physicians and philanthropists we should interest ourselves in this method of teaching and ascertain if a better way is not feasible; and while trying to remedy this great evil, not lose sight of the many other causes that are working deleterious effects among our school children. We assert that if the children are allowed to develop co-equal physically and mentally, and only as their delicate organizations will permit, they will become stronger men and women and thus help solve one of the great problems of the coming century.

A CASE OF DOUBLE EXOPHTHALMUS.

Read in the Section on Ophthalmology, at the Forty-seventh Annual Meeting of the American Medical Association, at Atlanta, Ga., May 5-8, 1896.

BY H. BERT ELLIS, M.D.

LOS ANGELES, CAL.

At 1:45 P.M., Feb. 11, 1895, I was summoned to see a man. The demand was urgent, as the patient was "bleeding behind his eyes." Before 2 o'clock I arrived at the place and found the patient on his back on the floor, with blood trickling from both eyes and ears. The right eye protruded from the socket, beyond the lids; the left also protruded from the socket, but the lids covered most of the ball, the palpebral slit being open only about a quarter of an inch. The intraocular tension of both globes was of stony hardness and the pressure from behind on the balls was so great they could not be made to recede at

all, and this pressure was so uniform that voluntary movement of the eye in any direction was impossible. The displacement was directed forward, the eyes looking straight in front. Both anterior chambers were filled with blood, completely obscuring the irides and pupils. Blood was oozing from all portions of the conjunctivæ, but there seemed to be more hemorrhage beneath that portion which lay in the horizontal diameters of the balls, the most profuse being between the external canthi and the corneæ. It was my first impression that there was a double aural hemorrhage, as blood seemed to be flowing from both external auditory canals. But neither the man's position nor condition was favorable to a careful examination at the time.

No evidence of traumatism had been found, excepting a slight bruise on the forehead where the man had evidently struck the floor, when falling from the lounge. I could find no signs of violence.

The history of the case prior to my arrival was briefly as follows: Mr. M., aged 35 years, who had been in the block some nine to twelve months, was temperate and spent most of his evenings in his rooms reading. For the past three weeks he had been drinking to excess, and for ten days had been intoxicated. On the 8th he commenced to sober off (taking as he afterward told me 12 ounces of Fellow's hypophosphites in two days). Becoming very nervous and restless on the evening of the 10th, he called in Dr. Clark, who administered ½ grain of codein, which produced a good night's rest. Monday morning, without the knowledge of anyone, he sought the nearest saloon, where he obtained whisky; the exact quantity is not known, but it probably was not very much, for at 12:45, when Dr. Clark called, he was apparently sober.

At 1:10 P.M. he seemed quite well, but nervous; at 1:15 P.M. the people in the vicinity were startled by loud and agonizing screeches. The proprietor of the block at once summoned Dr. Clark, who was in the building. They found Mr. M. on the floor, on his knees and elbows, with a finger in each ear, shrieking with pain. Blood was flowing, apparently, from both eyes and ears, and the eyeballs were protruding. Dr. Clark put him on his back and gave him a hypodermic of morphin, ¼ grain. This quieted him in a few minutes. When I arrived his pulse was 150, regular, but rather weak; respirations 16. At 2:30 he was given another ¼ grain of morphin, his pulse dropped to 120. He was quiet and his brain, at all times, was sufficiently active to answer all questions intelligently, and he retained perfect use of all his voluntary muscles. The diagnosis was uncertain.

Fearing some exacerbation of pain or further hemorrhage, he was put to bed without being undressed, and given 1 dram doses of fluid extract of ergot every two hours, ¼ grain doses of morphin, to keep the pain under control, and 1-100 grain doses of digitalin, hypodermically, to slow and strengthen the heart's action. Locally, hot cloths wrung out of boric acid solution were applied.

At 4 P.M. I again visited the patient. At this time both eyeballs were outside the lids, no motion of balls, but on attempting to move them, there was the faintest movement of the left upper lid. Tension + 3, hemorrhage the same as at first visit, an oozing from the conjunctivæ. An unsatisfactory examination of the ears showed a perfect right tympanum and in the left a mere point in the anterior inferior quadrant, which looked as though it might be a perforation.

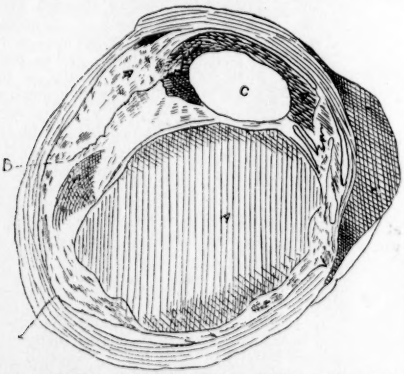
On the 12th the eyeballs were beginning to recede and to soften a little. Another examination of the ears was made, which decided that the point was not a perforation but simply a spot between calcareous deposits in the tympanum.

Until this point was decided I had not been able to hazard a diagnosis, but with the decision that the blood which apparently came from the ears was only that which had flowed into them as it trickled down the face from the eyes, I felt that the diagnosis was simplified. At first I thought that there had been an aneurysm of each of the orbital arteries which had ruptured almost simultaneously, due to stimulating effect of the whisky and strychnin.

In the second place, it was possible for an aneurysm of the right orbital artery to exist just after it branches from the internal carotid, within the cranial cavity but extra-dural. This would cause pressure in the right orbital cavity first and later in the left, as the flow of the escaping blood would be in the direction of the least resistance. This theory as to the origin of the trouble at once raised the question: If the hemorrhage was intracranial why did we not have brain symptoms, a slow pulse, impairment of motion to some extent or in some part of the body, disturbed sensation or a clouded intellect? Instead, we found a rapid pulse, 150 at the time of the accident, 120 later in the afternoon, 100 the next day. Motion was perfect and no disturbed sensation. His intellect, while not at its best, was very far from showing indications of a brain lesion. He would answer questions briefly but clearly; his memory, in so far as the accident was concerned up to the 14th, was practically a blank. From an anatomic standpoint, however, I believe it would be possible to have an extra-dural hemorrhage at this point, if the dura mater were sound, which would cause pressure only within the orbital cavities. On the morning of the 14th the eyes, although causing a hideous expression, had receded considerably, had lost their great tension, and the conjunctivæ and corneæ were breaking down, in fact, pus was present in the anterior chamber of the left eye, but the man's physical condition was growing worse. Fever in the afternoon, pulse rapid and irregular, considerable distress about the orbits but not amounting to actual pain; he was suffering most from his excessively nervous condition.

I advocated the removal of both eyes at once and performed a double enucleation on the 15th. After the operation he began to improve in general vigor, and March 9, about a month from the the date of the accident, he started for his home in Ontario, wearing a pair of "enamels" and feeling as well as he had in years. A couple of days after the operation he gave me the following history: He was a Canadian, single, 35 years old. His vision had always been good, but he had suffered periodically from nervous headaches and occasionally had severe pain in left side of head. For six or eight years he had had an external and internal pterygium of left eye. Occasionally he became intoxicated and on such occasions both eyes would become very much congested and the mucous membrane seemed to extend out over the cheek, but when he would abstain from stimulants his eyes would become normal. One year previous to the accident, while at Seattle, Wash., he had been on a protracted spree, which ended in a condition similar to that for which he sought Dr. Clark's services. He was then

treated for acute mania and was restored to his normal condition in a couple of weeks. After his attack in Seattle he drank no spirituous liquors for a year, and had on previous occasions abstained four or five years at a time, for he had found by experience that he could not use liquor at all without using too much. During the past year he had been using Warner's Safe Cure, thinking that his kidneys were out of order. For the past three months his health had been poor; everything that he did required an effort and ten days before the accident in order that he might keep up with his work he took some wine. In a few hours he was drunk from the amount of port wine and whisky that he had imbibed, and for seven days remained intoxicated, eating nothing; at the end of that time he drank four bottles of ginger. He was cold to his knees, his jaws were set and he could not move his arms. After the first drink he seemed to be irresponsible and had no idea of how time passed. After the seven days' spree he stopped drinking absolutely, but was troubled with hallucinations and illusions, against which he struggled for twenty-four hours. Sunday morning he was feeling so weak and



A, hemorrhage; B, choroid and retina; C, lens. Retina was also found in hemorrhage.

miserable, with no passage of the bowels in five or six days, he commenced on a bottle of Fellows' hypophosphites and in twenty-four hours had used 12 ounces of it, which represented 1 3-5 grains of strychnin. Sunday night he was still feeling so distressed that he called in Dr. Clark, who gave him sufficient codein (I believe) to assure him a good night's rest. Monday he was very excited, and when they brought soup to him at 1 o'clock he would not eat because he thought it was poison. While lying on the lounge he had a spasm of the stomach and with the spasm a blackness came over his eyes; he fell from the lounge, but saw the carpet as he fell. He thought that he had gone to hell and that his brain was full of little devils. With the great pain of the spasm he lost control of himself and he tried to get his fingers into his brain through his eyes, but that caused so much pain that he tried to reach his brain through his ears, then he recollected nothing more till an hour and a half later.

After the eyeballs were removed they were hardened in Wickersham's solution and later in formalin. They were carefully cut, stained and examined microscopically by Dr. Alex. Bruce of Edinburgh. Both the eyes were practically the same, and the accompanying diagram is a drawing from one of the sections. This shows the parts very much displaced, the aqueous and vitreous spaces filled with blood, subconjunctival hemorrhage and blood separating choroid and retina from the sclera, with parts of the retina in the hemorrhage. But this gives us no definite information as to the cause of the accident. The pathologist after hearing the imperfect history writes that "the condition was a result of a sudden thrombosis of the sinuses, and of this condition I understand there are some cases on record."

Personally, I am unable to explain the cause of the conditions satisfactorily, although I incline to the theory of his having gouged them out with his thumbs or fingers, but if he did I do not understand why the intra-ocular tension should have been so great. If due to double aneurysm, why was there no aneurysmal bruit and no pulsation, and if due to double thrombosis of the sinuses why should there not be more general disturbance?

REMARKS ON THE CAUSES OF GLAUCOMA.

Read in the Section on Ophthalmology, at the Forty-seventh Annual Meeting of the American Medical Association, at Atlanta, Ga., May 5-8, 1896.

BY LEARTUS CONNOR, A.M., M.D.
DETROIT, MICH.

Judged by its literature, the causation of glaucoma is unsettled. No effort to harmonize undoubted facts has met with general support. Whether glaucoma is a deformity or a disease, remains an open question. Thus Priestly Smith and his followers claim that glaucoma is a deformity of the eyeball, that an engorgement of the blood vessels in the posterior chamber pushes forward the lens and crowds the ciliary body and iris into the anterior angle, effectually blocking the outlet from the eye for the intraocular secretion. From the resultant intraocular tension he deduces the phenomena of primary glaucoma. The failure of this view to account for glaucomatous attacks in the young, in persons having no iris, in cases of intraocular tumor or dislocated lens, etc., has prevented its universal acceptance.

Of those holding that glaucoma is a disease, part affirm that it is purely local; and part that it is the local expression of a constitutional affection.

Von Graefe called simple glaucoma "amaurosis with excavation," regarding it as quite distinct in origin and course from glaucoma. Iridectomy failed to exert any appreciable influence upon its progress, in contrast with its wonderful power in checking the destructive force of acute inflammatory glaucoma.

Previous to his time glaucoma was regarded as a local inflammation, and treated with antiphlogistics, or as an arthritic disease; the result was the same in either case, viz.: total loss of vision. Not content with the empirical fact that iridectomy would cure a glaucomatous outburst, ophthalmologists have sought out its mechanism and the processes leading to it. The questions raised by this study are most intricate, far-reaching and difficult of solution. Thousands of workers have each contributed something of a positive or negative nature, but much still remains undone. The object of this paper is to briefly discuss a few points bearing upon the causation of glaucoma.

1. An obstruction to the outward flow of the fluids

in the posterior chamber is the most uniform characteristic of an acute glaucoma. Hence the importance of a clear idea of the normal flow of these fluids, and the changes made by the glaucomatous disease. The course of the blood is readily determined, in health, by the course of its vessels. Elaborate experiments have seemed to show that the oblique course of the efferent veins, through the sclerotic, combined with such disease of the veins as partially occluded their caliber, obstructed the outflow and so increased the intraocular tension, but this view has not obtained large recognition. That a variation in the caliber of the blood vessels does occur in glaucoma is evident, but all the facts seem to place these secondary to obstruction to the outflow of the secretions.

Knies, Webber and others have experimentally shown that the aqueous is secreted in the posterior segment of the eye and passes anteriorly through the connective tissue of the circumlental space, Fontana's spaces, Schlemm's canal, and the sclerotic into the capsule of Tenon. In this course the outflow is through connective tissue, and tissue matrix, not reaching spaces lined with epithelium until it enters the capsule of Tenon and the efferent lymph spaces of the subconjunctival tissue. Knies has shown that dissolved substances may in addition pass through the lens capsule and Descemet's membrane, but not formed or solid matters. Posteriorly, he has shown that the secretion of the posterior chamber escapes through the connective tissue spaces of the optic disc. The obstruction to the outflow of this fluid by a change in its nature has been the subject of elaborate experiments by Knies as detailed in *Arch. Oph.*, Vol. xxiv. Aseptic irritants were injected into the posterior chamber, that formed coagula in the secretion which obstructed the outflow spaces, producing an increase of ocular tension, dilatation of the pupil, and cloudiness of the center of the cornea. On removing the eyes he found both anterior and posterior outlets obstructed by the changed secretion. Hence he thinks that glaucoma is an irido-cyclitis, that secretes a noxious fluid, which clogs the meshes of the outflow connective tissue spaces. Experimentally this change of the secretion in the vitreous was temporary, but in the irido-cyclitis of glaucoma, he thinks that the secretion of noxious fluid is of longer duration and so the symptoms of glaucoma longer continued.

The study of glaucomatous eyes which have been removed, before total destruction, has shown an actual change in the connective tissue spaces of the outflow channels. The fibers have been found thicker and shorter, encroaching upon the spaces, and often entirely obliterating them. It is not possible to remove an eye in the early stage of glaucoma, or to find one in a person dying of acute disease, but in those studied nearest such a time, the changes in the outflow spaces have been found. Other changes have accompanied these, but we pass them for the present as we desire to state the fundamental idea in its simplest form. When we examine carefully the persons having glaucomatous attacks, we find that in many there is evidence of gout, either acquired or inherited; of rheumatic gout, rheumatism, syphilis, of those whose entire bodies have been surcharged during many years with badly assimilated products. In many of these we find evidences of interstitial diseases in other organs than in the eye. It is quite fair to infer that the impure blood produced by these constitutional diseases, may affect the connective tissue outlets. Given then an obstruction of the connective tissue outlets of the posterior chamber by an ophthalmitis affecting the connective tissue, due to impure blood, and any one of the so-called exciting causes of glaucoma may so change the secretion of the posterior chamber as to clog the outflow spaces, and so induce a glaucomatous attack. Our knowledge of general, so-called, blood diseases, added to Knies' experiments, and well-known studies of glaucomatous eyes, makes a rational chain of events leading up to an attack of glaucoma.

2. The following considerations place this causation of glaucoma in a clearer light. Thus outbursts of glaucoma are most frequent during and following middle life. This fact admits of two interpretations. *First*, Priestly Smith argues, that the lens becomes hardened and enlarged by age, so that it more entirely fills the circumlental space. Farther, he thinks that glaucoma occurs mostly in the hyperopic, in eyes in which this space is already abnormally small. In such an eye a relatively slight disturbance of the circulation of the posterior chamber suffices to push the lens forward, to crowd the iris against the anterior angle of the eye and to prevent the outflow through Fontana's spaces. The so-called causes of glaucoma, according to this view, produce an engorgement of the blood vessels of the posterior chamber, and so push the lens forward, when owing to a deformity of the parts the anterior angle is closed, and a glaucomatous attack induced. *Second*, a broader view of the relations of glaucoma to age, adds to the changes in the lens, changes found in other portions of the body. One has but to make a very superficial study of individuals during and after middle life to find that all the conditions are present for the promotion of connective tissue degenerations, as well as vascular, secretive and nervous. Individuals continue to eat as when they needed food for growth and development, as well as for the actual work of each day and the maintenance of existence. This excess of food fails to be perfectly digested, and so never becomes a part of the living tissues, but is driven about the blood, lymph and secretory spaces, in its course disturbing the wholesome activity of each part. Secretion and excretion are more or less disturbed, so that effete materials are retained within the body, thus increasing the disturbing and dangerous elements of the circulating fluids. When the connective tissues have been subjected for years to this constant irritation, and auto-infection it is not surprising that there results a group of interstitial or glandular diseases. Certainly we ought not to be surprised, if a few among the whole mass suffered from a degeneration of the outflow connective tissue spaces of the posterior chamber, and so became liable to an outburst of glaucoma, when some especial cause rendered the secretion of the posterior chamber, so noxious as to occlude the contracted spaces.

Another factor of age, intensifying that already mentioned, is the diminished muscular activity of advancing years, by which the utilizing of excess of food is diminished, secretions and excretions made less active, and so the accumulation of impure blood accelerated. Many other elements might be added, all proving that impure blood is the vice of middle life, a vice dependent upon numerous physical, mental and moral factors, but all laying the foundation for some organic disease. Why in one, interstitial nephritis occurs, in another interstitial hepatitis, in another

spinal sclerosis, and in another that disease of the connective tissue outflow spaces of the posterior chamber, is unknown. Possibly the same individual might have the entire list if he could live long enough.

Since diminished spaces in the connective tissues of the outflow channels is the factor which makes operative the so-called causes of glaucoma, then a child may inherit from gouty or rheumatic parents such diminished spaces, and so be attacked with glaucoma.

3. But aside from age, certain diseases are certainly closely allied to the causation of glaucoma. In several recent papers Dr. Richey has admirably discussed this point, showing the relation between the manifestations of gout, gouty rheumatism, etc., and glaucoma. He regards simple glaucoma as the basis of all forms of primary glaucoma. In each an interstitial ophthalmitis exists, originating as other interstitial diseases. The varied forms of the disease he ascribes to the part of the eye attacked, the rapidity of its progress and the order in which different portions are disabled by the disease.

In simple glaucoma the connective tissue in and about the optic disc is first affected by the noxious elements; contraction of the tissues follows, leaving more or less extensive excavation of the optic disc, and destroying in varying degrees the optic nerve fibers. The central retinal vessels drop to the sides of the excavation, and by their peculiar appearance, when seen by the ophthalmoscope easily prove the presence of the excavation. If in such a case the anterior connective tissue spaces become constricted, a slight disturbance of the secretion of the posterior chamber may suffice to clog the outflow, and produce a case of acute, sub-acute or chronic inflammatory glaucoma, according as the obstruction be sudden and complete or slow and incomplete. The fluid pent up in the posterior chamber pushes forward the lens against the posterior wall of the cornea, the ciliary body against the anterior angle; dilates the iris, renders it immovable and crowds it into the anterior angle; increases the tension of the eye ball; renders the cornea steamy and insensitive; dilates the anterior ciliary vessels, and induces a group of subjective symptoms, varying with the stage and degree of the blockage. In hemorrhagic glaucoma the events already noted are complicated by the rupture of weakened blood vessels within the posterior chamber.

In many cases of acute glaucoma there is no cupping of the optic disc because its connective tissues have not been attacked, the ophthalmitis being limited to the anterior outflow spaces. It would seem that the relationship of chronic humeral diseases to glaucoma is very important.

Dr. Jonathan Hutchinson (*Oph. Rep.*, Vol. ii) says that there are many different forms of inflammation of the eye, or parts of it, which are in connection with gout and gouty rheumatism. He divides them into two groups: 1. Those which go with acquired humoral or renal gout. 2. Those which depend upon inheritance of structures, damaged or specialized by gout in predecessors. The differences between these two classes is very marked. In one the attacks are of a transitory nature, acute and attended with much pain. In the second group there is great tendency to chronicity and persistence, though there is a tendency to temporary recovery and recurrence. The invasion is often insidious, but the disease is usually in the end destructive. These two groups admirably describe the characteristics of acute and chronic glaucoma.

If we seek the mechanism by which these diseases induce glaucoma we have but to remember that in them the connective tissue outlets of the eye are constantly bathed in the secretion formed from impure blood, just as we found in the case of the over-fed, badly fed, over-worked, under-exercised person of middle life or beyond. In both the connective tissues of the outflow spaces undergo organic changes that admit of their readily clogging, as the secreting fluid of the posterior chamber is altered by any one of the many existing causes of the glaucomatous outburst. Dr. David Webster (Trans. Amer. Oph. Society, 1885) reports a case in which a glaucomatous outburst followed a very hearty meal, and another from the eating of a peach. Dr. S. D. Risley reports a case in which certain acid fruits would surely excite such an attack, the special fruits were the peach and grape.

The one condition present in all cases of primary glaucoma is a contraction of the outflow channels; the one cause of this contraction is a hyperplasia due to the long continued irritation of the secretions from impure blood; the disorders inducing such blood are many, to some of which we have called attention, as the pollution incident to over-eating in middle life, gout, gouty rheumatism, syphilis, etc.

The one factor which is essential to the precipitation of an outburst of glaucoma is such a change in the secretion of the posterior chamber that it will clog the meshes of the outflow spaces. This changed secretion may be due to many causes, as imprudence in diet, to mental worry, violent emotion or shock; to overstrain of the eye, as in uncorrected astigmatism or presbyopia; to circulatory disturbances, as cardiac weakness; chronic cough, vomiting, stooping or straining; to mydriatics, etc. No one of these events has been known to induce, in a sound eye, an outburst of glaucoma; otherwise they would be of common occurrence, because these events are incident to the course of nearly every person's daily experience.

CONCLUSIONS.

1. Glaucoma is a disease rather than a deformity, like hernia or astigmatism.

2. The disease glaucoma has two distinct factors: one inducing changes in the connective tissues of the body, including the outflow spaces of the posterior chamber of the eye; the other so altering the secretion of the posterior chamber that it clogs the crippled outflow connective tissue spaces.

3. The first factor results from the long continued action of impure blood upon the connective tissue elements of the outflow spaces, the second from a variety of conditions acting through the nervous vascular, digestive and muscular systems, or through local strain of the eye, as in presbyopia, uncorrected astigmatism, or intraocular tumors, dislocated lens, or from the use of mydriatics.

4. Impure blood may result from many distinct diseases, as gout, rheumatic gout, syphilis, or from chronic overloading of the body with food in excess of its assimilative powers.

5. In simple glaucoma the connective tissue at the optic papilla is so attacked as to induce an excavation of the optic disc. If the anterior outflow space remains patent, there may be no symptoms except diminishing field of vision and the excavation, but if the anterior outflow becomes obstructed, increase of

tension and other glaucomatous symptoms appear.

6. In acute inflammatory glaucoma the anterior outflow spaces are suddenly closed, inducing all the typical symptoms of a glaucomatous outburst.

7. In sub-acute glaucoma the obstruction to the anterior outflow is less sudden and complete, and hence the symptoms are less severe and startling.

8. In chronic inflammatory glaucoma the obstruction is more complete and permanent, and so the effects are more hopelessly destructive—glaucoma absolute marking the final stage when vision is totally lost.

9. In hemorrhagic glaucoma the outburst is complicated by rupture of weakened intraocular blood vessels, so that hope of relief is slight.

10. In secondary glaucoma the same obstruction to the outflow channels occur. This may be due to an intraocular tumor, a dislocated lens, a lens swollen after decission, or to occlusion of the pupil, etc.

103 Cass Street.

SOME QUESTIONS RELATING TO GLAUCOMA.

Read in the Section on Ophthalmology at the Forty-seventh Annual Meeting of the American Medical Association held at Atlanta, Ga., May 5-8, 1896.

BY ALEX. W. STIRLING, M.D., C.M. (EDIN.), D.P.H. (LOND.).

ATLANTA, GA.

I propose to bring forward for discussion certain parts of the subject of glaucoma, which though far from novel, yet appear to merit, from their importance and the still divergent views concerning them, a constantly recurring investigation. These questions are:

1. Is glaucoma always preceded by papillitis?

2. Are certain doubtful cases of chronic glaucoma with an apparently normal condition of the anterior segment of the eye, unaccompanied by any sign of spinal and cerebral disease, but showing what is known as the true glaucoma cup; are these really glaucoma, or are they optic atrophy?

3. Should all cases of primary glaucoma be operated upon?

4. What is the cause of the cataract which occasionally appears in eyes which have just undergone operation for glaucoma?

Question 1.—Those who hold that papillitis is a constant accompaniment of the early symptoms of glaucoma should be divided into two classes, viz., those who assert that it actually precedes the glaucoma, and those who refer to it merely as invariably present in the initial stages of the disease.

An abnormal condition of the blood vessels on the disc, with edema, is described by many well-known authors, and is no doubt familiar to most as a symptom of confirmed glaucoma, and may be dismissed as a possibly perfectly natural result of the glaucoma pressure.

But it is otherwise with the assertion that papillitis is a constant precedent of glaucoma. Klein supported Jaeger in this contention; Mauthner[1] thought the optic nerve was so softened by a morbid process secondary to choroiditis as to cup later under normal tension; Brailey and Edmunds[2] had reason to believe that in primary glaucoma "neuritis" precedes the increased tension, and that an inflammation is also present in the ciliary body and iris; Gruening[3] recognized a congested disc as visible along with the first premonitory symptoms in certain cases; Knies[4] has observed: "Among the earliest and most characteristic appearances . . . I found marked hyperemia and edema of the optic nerve. This appears to be the regular beginning which passes in weeks into cupping"; Bitzos[5] asserted that "one can accept as an absolutely certain fact" that glaucoma begins "by a papillitis constituting a lesion which is primary and at the same time fundamental," and that during this stage, before the advent of *plus* tension or of any outward sign, the cases being frequently discovered by accident, there is diminution of visual acuity and in the dimensions of the field.

If we admit that glaucoma is always necessarily preceded by optic neuritis (which has certainly not been universally observed), it practically follows either that the condition of the optic nerve blocks a path of exit for fluids from the eye in such a manner as to cause forward displacement of lens and iris, with secondary obliteration of the normal filtration area in the corneo-iritic angle, or that glaucoma is an inflammatory disease with iritis secondary to, or accompanying, the papillitis. Now, experiments have shown that only a very small proportion of the ocular fluid leaves the eye in the region of the optic nerve; and we also know that in ordinary undoubted optic neuritis glaucoma may be said never to follow either in the inflammatory or atrophic stage; and even if we were, for the sake of argument, to admit that, normally, a large amount of fluid has its exit in this region, it would yet be hard to see why its blockade should cause that adhesion between cornea and iris so nearly universal in glaucoma. We should rather expect merely a more rapid drainage at the angle.

Against the theory that glaucoma is an inflammatory disease and that the corneo-iritic adhesion is due to an iritis, a theory upheld especially by Knies, one might quote the opposite opinion of Bowman, expressed thirty years ago, and of De Wecker and many others since then, as well as that of the elder Critchett, Priestley Smith and Fuchs, that it much more nearly resembles a strangulated hernia. The following facts might also be arrayed against the inflammatory theory: Glaucoma with glaucomatous cupping, found in cases of mechanical obstruction to outflow through the corneo-iritic angle from affections limited to the anterior part of the eye, as from dislocated lens, in which case the tension may rapidly rise and fall according to the position of the lens, or, from hereditary ophthalmia, the result of malformation in or near the angle of the anterior chamber; the suddenness of the early attacks and their disappearance; the fact that an operation, and that on the anterior part of the eye, can quickly and permanently remove the symptoms; as well as the fact that a drop of some mydriatic may cause an acute attack in an eye previously absolutely free from inflammation.

Question 2.—The cases referred to are those designated "amaurosis with optic nerve cupping," by von Graefe; "glaucomatous optic nerve disease," by Edward Jaeger; and "excavation atrophy," by Stellwag, and which have been by some ophthalmologists, separated from other forms of glaucoma, but by others of equally high repute held to be merely one extremity

[1] Mauthner: Archiv. Ophth., N. Y., vii, 1878, p. 178.
[2] Brailey and Edmunds: London Ophth. Hosp. Reports, x, 1880, p. 86.
[3] Gruening: Trans. Am. Ophth. Soc., 1889.
[4] Knies. Centralblatt f. All. Path., April, 1890.
[5] Bitzos: Annal. d'Ocul., vol. 112., 1894, p. 92.

of a continuous chain of connecting cases which terminate in the other direction in glaucoma fulminans.

I desire to take the position that these cases should be looked upon as glaucoma, and I presume that there would be no difference of opinion concerning such of them as might show even temporary increase of tension, or any symptoms in the iris which might point to peripheral corneo-iritic apposition. It will also be agreed that there is no known reason why glaucoma and primary optic atrophy should not coexist in the same eye. But leaving out of the question all such cases, the following appear to be reasons why "simple" glaucoma may be looked upon as real glaucoma and not as optic nerve atrophy.

It has been asserted by Schweigger that unless increase of tension is distinct this symptom is of no value for diagnosis, as one can easily discover *plus* tension if one have faith enough. But it is well known that the normal ocular tension varies with the individual. We may, therefore, consider it as certain that a tension which is normal for some eyes is *plus* for others, that it is just as easy to omit to find a real *plus* tension as to imagine one which does not exist, and conclude that in certain cases, which appear to palpation normal, there is in reality a heightened tension. This argument is supported by the fact that it is not a very infrequent thing to find cases recorded by ophthalmologists of the first rank, in which at the the same moment and in the same eye there coexist the apparently incongruous conditions of glaucomatous halos or rainbows and normal tension, the former having been proved to result from a very slight edema of the anterior layers of the cornea due to a rise of intraocular pressure.

The statement was made by Zentmayer and Posey, in connection with their examination of 167 cases of simple glaucoma, noted in the clinics of Norris and Oliver, in Philadelphia, that shallowing of the anterior chamber was found in glaucomatous eyes where there was not yet excavation, while the converse was not true, for every eye which had an excavation had also a shallow anterior chamber. By a shallow anterior chamber they evidently meant pathologically shallow, and their statement appears to indicate that *plus* tension, relative to the eye involved, as witnessed by the shallow anterior chamber, was or had been present in all these cases in which the disc was cupped.

One should also bear in mind that it is easy to fall into error concerning the condition of the anterior chamber. It is generally inferred that whenever it appears to be of normal depth there can be no peripheral apposition between cornea and iris. But the periphery of the iris and of the posterior surface of the cornea are quite hidden from view by the anterior margin of the sclerotic, and a deep anterior chamber has been proved to be quite compatible with corneo-iritic adhesion. It has also been shown (and such sections I have in my possession) that the iris sometimes makes an abrupt backward bend at the point at which it separates from such a corneal adhesion, which hides more effectually the true condition of affairs. On the other hand it would be hard to prove a normal state of the filtration angle, because such doubtful eyes as those under discussion are not excised, and even in the rare cases in which the angle is found open, in primary glaucoma, signs are frequently present that this patency has resulted from the excision of the globe.

It has been abundantly shown that high tension occurs at one time or another in the vast majority of cases, that it may be present only very temporarily and at long intervals, and also that such cases, or others in which it happened that apparent *plus* tension had never been found, have not infrequently ended in acute glaucoma. There is also the possibility that, like other bodily functions, the circulation through the eye may vary very considerably in the twenty-four hours, and that tension may be high when the patient is beyond observation, in the evening when he is tired, or even that the recumbent position may affect it in one way or another.

We know that there is, in all probability, an automatic action, within the eye, whereby a rise in intraocular pressure has the tendency to again bring the tension down to normal, through pressure on the uveal vessels preventing farther secretion from them. It would appear as if in the quietest forms of simple glaucoma the blood pressure was so low that a comparatively slight rise of intraocular tension would attain this result, little fresh fluid being poured into the eye so long as the pressure outside the vessels remained of sufficient force, and the hypothesis of an intermittent rise and fall in pressure appears to me reasonable. Nettleship has already stated that the condition, as regards tension and organic changes in chronic cases, may perhaps be sometimes due to feeble circulation or loss of arterial elasticity.

The acuity of the onset of symptoms would therefore appear to bear a direct relationship to the vascular tension in the uvea, or else the cause of their appearance to be of a rapidly fluctuating character.

It might not be unreasonable to suppose that when the corneo-iritic filtration area is blocked and the tension in the vitreous is higher than that in the uveal vessels the capillaries in the ciliary region, which are wont to carry fluid to the vitreous, may then assist in removing fluid from it.

A further argument in favor of the glaucomatous nature of these cases is the growing feeling that iridectomy is beneficial and should be employed for their relief.

I have purposely avoided reference to certain supposed points of difference between simple glaucoma and some forms of optic atrophy, the form of the visual fields, variations in peripheral color vision, and in the "light difference" and "light minimum," in color of the disc, in size of retinal veins, in pulsation of the retinal artery, in the pupil, etc., for I have looked at the subject from another point of view.

Question 3.—The question will naturally be looked at from two standpoints—that of practical experience and that of pathology. Experience at the present day appears to favor operation, but much depends on the operation chosen and upon the method of its performance.

In certain cases operation is by some considered to be contraindicated; such as glaucoma due to mydriatics, which is frequently permanently cured by myotics; chronic glaucoma in patients whose health is poor from age or disease, but this is doubtful policy, and such cases of simple glaucoma as appear to benefit from myotics, and can be kept carefully in view.

From the pathologic standpoint the wisdom of the earliest possible operation is apparent to those who look upon glaucoma as an interference with the functions of ocular excretion, and the objects of treatment, whether by drugs or operation, to be the opening up of closed exits.

When forward displacement of lens and iris are found denoting that the obstruction lies at the lento-zonular level, a preliminary posterior sclerotomy to permit of their retraction, as advised by Priestley Smith, suggests itself as a suitable procedure, to be immediately followed by iridectomy, sclerotomy, or one of their modifications. The object of these operations is to produce a permanent path of exit for the intraocular fluids, either by opening up the normal filtration angle, and so removing the iris as to prevent the possibility of the recurrence of the closure, or, where this is impracticable, to provide a sufficient substitute.

We know that in the earlier periods of glaucoma the iris is in contact with, but not adherent to, the corneal periphery, and cure may be effected, as has been pointed out by Treacher Collins, by the mere escape of aqueous or by the dragging on the iris during its removal; but iridectomy should have in view much more than this. As frequently or generally performed, the iris is seized by forceps and then cut off, with the result that sufficient remains to again block up the exit. The better way is to tear the iris from its junction with the ciliary body, where it is flimsiest, from one end of the wound up to the other, and failure to do this has been the most prolific cause of non-success. Indeed, in forming an opinion as to the benefits of iridectomy one should be careful to distinguish such operations from those in which the iris is merely snipped away.

When iris and cornea are so adherent that they can not be separated, *i. e.*, in chronic, long-continued cases, our hope lies in the formation of subconjunctival fistulæ. When these are permanent and successful they are lined by atrophic iris which keeps the wound from healing. Where this adhesion is known to exist an opening into the posterior chamber through the iritic root as advocated by Treacher Collins, Nicati and Knies, has the best prospect of success, and the V-shaped incision of Nicati, which also freely divides the base of the iris, but upon which I can not speak from personal experience, appears to be attended by excellent results. In those cases in which the actual position of the angle may at first be doubtful, and in which an iridectomy proves useless, Nicati's incision downward might well replace the secondary sclerotomy so frequently employed.

Vincentiis of Naples claims for his operation of tearing or cutting away the iris from the cornea with a sickle-shaped needle that, when these tissues are adherent it acts in a manner superior to either iridectomy or sclerotomy.

In concluding this question I would advocate the earliest possible operation in practically all cases of primary glaucoma (at the same time that attention is given to the general health) independent of contraction of the field, and so long as there is any vision to be saved or pain to be relieved; and that the better eye should first be treated, because in it there is more to lose by delay, and because in the event of only moderate success, or worse, with the first eye, the patient may be disinclined to return on account of the second.

Question 4.—It has been stated by ophthalmic surgeons of the highest order, among whom is one who has done some of the best work in recent ocular pathology, that the cataracts rapidly following upon iridectomy are always due to a wound of the capsule of the lens received in the course of operation. That the possibility of this is one of the serious objections to operation for glaucoma, that it may readily happen in the hands of the most skillful, especially when the cornea is small and the anterior chamber shallow, and that the wound may arise not only from the edge of the knife, but also from the back of a "Graefe," from the iridectomy forceps, or during reposition of the edges of the coloboma, will, I think, be readily admitted.

But it is more pleasant to the feelings of the surgeon, who, after the greatest care to avoid the lens, and in the belief that he had done so, yet shortly discovers a rapidly growing cataract, to know that other explanations of its occurrence may be forthcoming; and these, I think, are not difficult to find.

To begin with, any one who will carefully examine the lenses in a series of apparently healthy senile eyes under a mydriatic will observe that in no small proportion of them he can discover peripheral striæ, not the normal striæ of the section of the lens visible by transmitted light in the eyes of many old people, but due to true cataractous change. In glaucomatous eyes these have been noticed in a still higher proportion.

In such eyes, or even in eyes without such lenticular change, it can scarcely be considered unreasonable to hold that the sudden alterations of conditions resulting from the emptying of the anterior chamber may have just as much effect in producing or in ripening cataract as has the well-known method of friction on it, directly or through the cornea. For those changes are very considerable: The zonular attachments are strained by the forward movement of the lens, and the lens may even come in contact with the cornea, while one must expect its nourishment to be seriously interfered with by the rapid passage from the eye of the fluid upon which its welfare depends, a fluid which also, as Nicati, Greef and others have shown, undergoes a change in composition upon the first opening of the anterior chamber.

A CLINICAL NOTE ON THE USE OF PYOKTANIN.

Read before the Section on Ophthalmology at the Forty-seventh Annual Meeting of the American Medical Association held at Atlanta, Ga., May 5-8, 1896.

BY H. B. YOUNG, M.D.

BURLINGTON, IOWA.

My experience with pyoktanin probably differs little from that of your own in those suppurative troubles of the eye and ear for which it has been considerably lauded, *i.e.*, occasionally very satisfactory, but more often disappointing, if not indeed aggravating. In fact after many disappointments I practically discarded it from my list of remedies as I have no doubt many have done.

About two years ago, however, after an unsuccessful attempt to treat a case that I had diagnosed as phlyctenular conjunctivitis, by the classical method, viz.: Pagenstecher's ointment, calomel dust and mydriatics locally, plus alterative and tonic medication internally, pyoktanin in 1-1000 aqueous solution locally was accidentally suggested. To my surprise the case improved rapidly under it and was soon well. A month later the patient, an anemic girl of 15 years, returned with a fresh efflorescence. Again was the Pagenstecher's ointment and calomel dust distinctly irritating and the pyoktanin promptly effective. Following this at irregular intervals the efflorescence recurred and was promptly subdued by the pyoktanin. In the meantime a younger sister of this patient

showed the same conditions, had the same treatment with the same result.

From this time all cases of conjunctivitis lymphatica were treated in this way and it was noticed that those were soonest benefited in which the efflorescence was marked by lachrymation and congestion of the palpebral conjunctiva, while the elevations at the limbus showed irregular outlines and little disposition to surface softening.

Why there should be this difference or why the pyoktanin should, in any case of this character, be as effective as the time honored mercurials I do not know.

Pharmaceutically the mercurials were as perfect as possible. The Pagenstecher's ointment I prepared by a method which could hardly be improved, as the product stands the test of inspection through a powerful lens. And the calomel was of the best quality, thoroughly dried and lightly dusted.

The pyoktanin was Merck's, dissolved in water which had been boiled thoroughly. A fresh solution was prepared when any change was noted in the color.

DISCUSSION.

Dr. G. C. SAVAGE, Nashville—Just before leaving home I prescribed pyoktanin for three cases of phlyctenular conjunctivitis and as Dr. Price has just entered the room I should like to know from him what the result has been.

Dr. PRICE—The only one of the patients that has returned is doing well. It was a bad case and had shown no improvement under a week's use of the yellow oxid.

FRANKLINIZATION AS A THERAPEUTIC MEASURE IN NEURASTHENIA.

Read in the Section on Neurology and Medical Jurisprudence at the Forty-seventh Annual Meeting of the American Medical Association, held at Atlanta, Ga., May 5-8, 1896.

BY MARGARET A. CLEAVES, M.D.

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NEW YORK.

Looking at it from a purely scientific point of view the recognition under the head of neurasthenia of the many and varied expressions of nerve weakness is most unfortunate, and must have a tendency to hinder that investigation into the true nature of the underlying conditions which is absolutely essential to the advancement of the science of medicine. On the other hand this recognition has led to the establishment of excellent therapeutic methods, which, however, are so familiar as not to need enumeration here.

Among them Franklinization takes an important place, and although it is the oldest form of electric treatment, its value is not yet fully appreciated by the profession.

It is not within the scope of this paper to discuss the nature of neurasthenia, interesting as the subject is, suffice it to say that neurasthenia in an acquired form, may be regarded as primary or secondary; primary when due to the immediate effects of nervous overstrain or to a primary toxic disorder of nutritional processes, and secondary when consequent upon other diseases having a general pathologic diathesis with its peculiar and exhausting toxic influence.

The nutrition of nerve cells is primarily at fault, and they break down even under slight overstrain, whether of work or mental anxiety. They lack in stability, and are incapable of ridding themselves of the results of physiologic activity. The toxicity thus induced plays an important rôle in the production of the varied manifestations of physical and mental discomfort to which the neurasthenic is subject.

The problem before us in the treatment of neurasthenia is to prevent undue waste of nervous substance from excessive fatigue as well as to eliminate the toxic influence of self-produced waste products. To this end whatever can be done to establish and maintain the highest nutritive activity is absolutely imperative.

Whether we regard the neurasthenic condition as due to exhaustion, starvation or poisoning of nerve centers its treatment by means of Franklinization is absolutely rational.

There is nothing of the occult about it, nor can the action of general Franklinization either by means of the convective or disruptive discharge be, in any sense, attributed to suggestion, hypnosis or to some subtle influence upon the nervous system. The same effects can not be reproduced by such methods.

The grand function of all electric treatment is to promote nutritive processes, and in general Franklinization there is no exception to the rule. On the contrary, by reason of its physical characteristics it is the most efficient of the varied manifestations of electric energy. The ease with which it can be used, requiring no preparation nor tedious detail in its administration as do other currents, renders its application very acceptable to patients.

The influence of high frequency and high potential currents upon nutrition has been established by observations in physiologic laboratories and in clinical work.

In all neuroses there are abnormal chemic conditions of the tissues and aside from the influence of heredity, deficient constructive and deficient destructive metabolism are the two prominent factors therein. The need therefore in our therapeutics of a means which will influence a more nearly normal metabolism is imperative. The rationale of general Franklinization lies in its ability to set up processes resulting in the production of physiologic effects.

The increased activity of an organ is indicated by the increased amount of blood circulation. When an organ is completely inactive, as in the case of a paralyzed muscle or the peripheral end of a divided nerve, the amount of blood and the nutritive exchange of fluids diminish within these parts. Thus thrown out of activity they become pale and relaxed, and ultimately undergo fatty degeneration. If cells are imperfectly deprived of their detritus they do not appear to take up oxygen readily, consequently are not adequately nourished and undergo degenerative changes.

The average neurasthenic patient is not in a condition to take the active exercise necessary to bring muscular tissues into activity so as to profoundly influence circulatory changes. It is impossible to change the nutritional state of cells without a profound stimulating action. The general circulation in these conditions is impaired, while vascular changes in the nervous system exist. These are of the nature of a cerebral hyperemia and probably hyperemia of the spinal gray matter as well. The vaso-motor

neuro-mechanism is believed to be at fault. The extremities are cold and the heart's action feeble. If the blood stream does not circulate with normal activity new material is not supplied to the tissues, nor is effete material removed from them. As a general rule the stimulation is more energetic, the more rapid the variations of the electric current applied to the nerve (Du Bois Reymond).

In the great variations of potential which the patient subjected to general Franklinization experiences, may be found a reason for its profound stimulating effect. A constant and inconceivably rapid variation of potential characterizes every Franklinization, whether by means of the convective or disruptive discharge. And this variation must result in profound stimulating action upon nerve cells, enabling them to alter their nutritional state.

In employing currents of great frequency the organism is traversed without manifesting any reaction. If the frequency of these currents were lowered their energy would be destroyed in so far as the production of characteristic physiologic effects are concerned.

It is believed by D'Arsonval that these currents exercise upon nerve centers and upon muscles the action studied by Brown-Séquard under the name of *inhibition*. The tissues traversed by them are those less susceptible to the ordinary excitements. The physiologic effects demonstrated by D'Arsonval and others would indicate that currents of high frequency have a profound influence upon the organism affecting nerve centers, however deeply placed, even though the application electrically alters or disturbs the superficies of the body alone.

The vaso-motor nervous system is also strongly influenced. After an experiment upon the human organism with these currents has been long enough continued there can be seen upon the cutaneous surface dilated capillary vessels and the skin is found to be covered with perspiration. There is also an increased intensity of the respiratory combustion. The excretion of urea is increased and uric acid, if present, diminished, or on the other hand a normal or more nearly normal relation is established between them. The ultimate effects are upon all the nutritive processes. Oxidation is furthered and metabolic changes hastened.

By means of the disruptive discharge or spark a profound perturbatory effect is produced. Whenever a spark impinges there is produced an effect upon the vaso-motor nerve followed at first by a vaso-constriction as evidenced by the pearly white or goose-flesh appearance of the skin. This in turn is followed by a vaso-motor dilatation evidenced by redness of the skin. If for any reason there is a localization of the disruptive discharge there may be produced a distinct dermatitis as the result of the application. Also as a result of the disruptive discharge more or less profound muscular contraction is produced according to the character of the spark, larger and more extensive with the long spark gap; shorter, sharper and quicker with the lesser spark gap.

The rôle of muscular activity is one that is well established, and the effect is to produce an increased activity of the blood stream within the muscles of an intact body. The blood vessels dilate so that the amount of blood flowing through them is increased. At the same time the motor fibers are excited, the vaso-motor fibers are also. Muscular contraction is attended by the production of heat. This is greater or less according to whether these contractions are many but small, or fewer and larger. In the latter case more heat is generated. This shows that larger contractions are accompanied by a relatively greater metabolism than small contractions, which is in accord with clinical experience.

Then again, we have to deal with the two-fold influence of the nervous system upon metabolism. On the one hand it acts indirectly through its effects upon the blood vessels, by causing them to contract or dilate through the agency of the vaso-motor nerves, whereby the amount of blood supplied, as well as the blood pressure, are influenced. But metabolism is still further influenced, independently of blood vessels, through the trophic nerves.

The afferent supply of blood current carries to the tissues the proteids, fats, carbohydrates and salts from which the tissues are formed, and any interruption of the arterial supply diminishes the supply of nutriment. On the other hand, the efferent stream carries away decomposition products from the various tissues, more especially urea, CO_2, H_2O and salts, and transfers them as quickly as possible to the organs through which they are excreted. With the supply of nutrient material thus provided and the removal of the products of organic life, the vagaries, morbid fears, melancholias even, the aching and weariness as well as the hyperemias, are relieved.

The convective discharge is the treatment *par excellence* for neurasthenic patients. By it is meant what is commonly known as the static spray or breeze. It is in reality a succession of infinitesimal sparks as obtained from the powerful Holtz machines, which passes into a continuous stream between the two discharging rods or the insulated patient and the administering electrode. This discharge is non-oscillatory in type and, so far as can be seen from its physical nature, produces but superficial effects. The effect, therefore, upon the interior of the body is by a secondary influence, produced primarily upon the superficies, by which it becomes electrically altered or disturbed. If the charge is mild, this convective discharge will only be felt as a cool wind, but when these machines are working to their full capacity, and particularly if the patient holds the chain in the hands, establishing connection with one prime conductor of the machine, there is a marked tingling, stinging and pricking as of many needles. By localizing this discharge to any point desired, the seat of an obstinate pain, there can be produced an extensive redness and blistering (dilated capillary vessels) of the skin, and in sensitive conditions of the spine where there is pain on pressure, I am in the habit of continuing the localization long enough to produce this effect.

When a piece of woolen cloth or a patient with woolen clothing is placed upon the platform in contact with the distributing chain and subjected to a localized convective discharge, the clothing or the fabric is microscopically[1] burned as though by many minute coals of fire.

Ordinarily, the passage of one coulomb of electricity through a circuit in one second of time means a rate of flow or current strength of one ampere, on the average during that time. If[2] this coulomb passes through the circuit in one-thousandth of a second,

[1] With my large 8 plate, 30 inches in diameter, Holtz machines, this burning is not only microscopic, but macroscopic as well.
[2] Houston and Kennelly: Electricity in Electro-therapeutics.

the mean current strength would be 1,000 amperes, and if in the millionth part of one second the mean current strength would be 1,000,000 amperes. For this reason the total quantity of electricity, in a pair of leyden jars for instance, or in the case of a working conducting circuit where the patient represents the one leyden jar and the grounded area the other, even when charged at a pressure of thousands of volts, is very small; yet owing to the great frequency or rapidity with which this charge is passed through the circuit, the current strength during that time may be considerable. The action upon the woolen fabric would indicate that such is the case. The patient in this conducting circuit is doubtless traversed by an alternating current of greater strength than would be borne without pain under ordinary conditions.

In the convective discharge there is produced an effect upon the nervous system, affecting the vaso-motor nerves, causing first a vaso-constriction, as evidenced by the sense of chill and shivering when first subjected to its action, followed by a vaso-dilatation, with an ultimate equalization of the blood stream. Under the influence of the convective discharge the activity of the skin is increased with perspiration, most noticeable in palms of the hands; the temperature, if subnormal, is raised, if abnormal reduced, while the heart's action is regulated. Corresponding circulatory changes are established, as shown by the number of pulse-beats before and after the discharge, the change in volume and the sphygmographic trace. Such physiologic effect can not be produced without causing a change in the patient's condition and inducing a feeling of well-being.

The pains and weariness, the morbid fears and fixed ideas disappear under these more nearly normal conditions, but the disappearance at first is only temporary. The changes set up are not sufficient to endure perhaps for more than a few minutes, a half hour; in rare instances, twenty-four or forty-eight hours. More work must be done before nutritive changes are established to such a degree as to prevent a recurrence of former conditions. The flagging energies are aroused by the stimulating influence of the application, which, however, if not persisted in, is as valueless as the whip and spur to the exhausted horse without rest and food.

In the desultory and unscientific way in which Franklinization has been used are to be found the reasons for its failure. Only with a large clinical experience is it possible to reach definite conclusions as to the manner of its application, the length and number of seances, and to formulate a law governing its administration. Personal idiosyncrasies, as well as the duration of the disease and the manner of its manifestation, must be considered.

Moral means must never be lost sight of; in addition to the general Franklinization, the rest or exercise, according to the character of the case, is of paramount utility.

In the treatment of neurasthenic conditions by means of the Franklinic current, I find that I can secure without enforced rest and seclusion the return of health to a considerable class of neurasthenic patients, with greater independence of character and increased volition, than is possible by means of the rest cure and massage. These last named measures have their value, but to a large number the seclusion, the dependence upon others for every thought almost, certainly for every volitional act, is pernicious in the extreme. Habits of invalidism are fostered, with fixed ideas as to the suffering and disability endured, which means a changed nutritional power on the part of nerve cells.

In a paper upon the "Psychical Treatment of Neurasthenia," by Dr. J. J. Putnam of Boston,[3] the influence of general Franklinization upon temperature and pulse in neurasthenic patients is considered. He shows a similar influence with the patient placed upon the platform and no connection made, but the machine still in motion as in the ordinary application of the convective discharge. The conclusion that he seems to draw therefrom is that the changes in temperature and pulse are due to some subtle influence upon the nervous system, rather than from the Franklinization. He does not state whether in the latter instance the machine was in a state of charge or not; the inference must be that it was. Such being the case, the patient still remained in the electro-static field even though the insulating platform was not connected with the source of energy.

From the physical laws governing electricity at these potentials it is absolutely impossible to keep it within bounds. There is a constant leakage from the metal finishings of the machine, and a disturbance is created in the entire atmosphere of the room. Henry has shown that a spark from an electric machine extends its influence to a distance of many feet. Physiologic effects may be obtained by standing in the vicinity of powerful dynamos in operation, and physicians from various sections of the country have told me of sending their sleepless neurasthenic patients to electric power houses that they might have the benefit of the electric disturbance thus created.

But there is also another influence at work. It is absolutely impossible to have an electro-static machine in operation without the production of ozone. Chemic tests demonstrate the existence of ozone in the atmosphere, and it is shown that it exists in greater quantities in the country than in the city, at the sea shore and in the mountains in still greater abundance, notably in the best climatic resorts of high altitude. It is, no doubt, one great source of the healthful influence of such places. Near the backbone of the mountain range of the Blue Ridge in North Carolina, it is so abundant as to be constantly apparent by its peculiar odor. Its increased chemic activity renders it more effective than oxygen. It is not necessary here to speak of its intense oxidizing action, antiseptic properties and power of destroying offensive odors. Recently its physiologic effect has been very carefully studied by M. M. D. Labbe and P. Oudin and published in the *Bulletin Officiel de la Société Francaise d'Electrothérapie* for November, 1894.

These observations showed, even after ten minutes inhalation of ozone, an increase in the amount of hemoglobin of from 1½ to 2 per cent. Subsequent examinations, made several days later, demonstrated that the increase persisted. The examinations were made by means of the spectroscope. There was also a proportionate increase in the number of red blood corpuscles and a progressive diminution in the number of white, and the conclusion arrived at both from physiologic experiments and clinic results was that ozone most powerfully modified the blood and nutri-

[3] Boston Med. and Surg. Journal, May 23, 1895.

tion, resulting in the establishment of health. One of the sources for its production are the large Holtz or influence machines used in medical work.

When the influence machines in my office are in motion, the electro-static field extends not only over the entire floor occupied by the machine, but to the basement below, sparks being drawn from the gas pipes, etc. The electro-static field is enormous in its extent, and while we secure our best results from the use of an insulating platform, it is not necessary to obtain physiologic effect.

By the action of the electric spark upon the air a synthesis is produced whereby we have ozone formed. At least a part of the benefit derived from general Franklinization by means of the convective discharge is due without doubt to the production of ozone, and in Dr. Putnam's cases this influence could not have been eliminated, as the ozone pervades not only the atmosphere of the room where the machine is placed but adjoining rooms as well.

During three years' work at the Electro-Therapeutic Clinic at the Post-Graduate Medical School the nurses who were sent to the clinic for two or three hours three times a week to assist in the work, spoke to me of a general physical improvement of which they were conscious, with relief from menstrual pain and improved sleep. Their appearance indicated a nutritional gain. Different nurses made these statements from time to time during their term of service, and after my attention was called to it I was in the habit of watching them closely, taking their weight, etc., and inquiring as to physiologic functions, in order to establish the correctness of their reports.

In dealing with this form of electric energy we must remember that on account of its high frequency and high potential it pervades all space around the conductor. The metallic prime conductors, the conducting rod connecting the same to the platform, merely provide a surface from which the charge can enter and influence the air around it. The charge really resides in the air, or more strictly in the air and ether surrounding the body. The energy is distributed through all the ether in the room, although not equally. The greatest current density exists upon the insulating platform and about the body of the patient; after that in the space near the machine, and consequently the greatest difference of potential would be maintained in the former instance, with a greater and more effective convective discharge.

I can sit upon an insulating platform entirely disconnected from the machine and still demonstrate that I am in the electro-static field by the movement of a silk thread toward and to one prime conductor. With the platform disconnected, and the machine grounded as in ordinary use, there is not only a convective discharge that is apparent by the usual physical phenomena, but a disruptive discharge can be produced by approaching any part of the body to the electrode connected with the ground or the prime conductor. This discharge is of the non-oscillatory type. Therefore the observations to which I referred are not convincing.

THE TECHNIQUE OF ADMINISTRATION.

In connecting a machine for use it should always be grounded. The insulating platform is connected to one prime conductor by means of the conducting rod, while the other is connected by means of a chain to some suitable ground in the room or near by, as for instance a gas or water pipe.

The disruptive discharge when the machine is not grounded, is of the non-oscillatory type, as is indicated by its thin, blue straggly appearance. It has a biting and irritating character, which renders it extremely objectionable to the average patient, especially the neurasthenic.

Grounding the machine enlarges the area over which a charge may be distributed before it is discharged by its spark, and practically amounts to the use of large condensers, *i.e.*, Leyden jars. It increases the electrical capacity; there is not only a greater charge, but a greater discharge, whether convective or disruptive. The character of the discharge is changed in some instances from an non-oscillatory to an oscillatory one, while in others there is produced a more typical oscillatory discharge. The disruptive discharge thus obtained is vivid, clean and thick and not inclined to break up nor irritate as the spark obtained from the direct method. This is due to the change in the character of the discharge, from an non-oscillatory to an oscillatory one, and in this physical fact is found the reason for grounding our machines for medical work.

Until recently the question of insulation was regarded as an important one, as the physiologic action of the different insulations, *i. e.*, positive and negative, had not been accurately determined.

Some six years since Damian of Paris made a series of observations upon temperature and pulse and the urine to determine what, if any, difference there was in the different insulations. The published statement showed that with the positive insulation there was a regulation of the temperature and heart's action, an increase of urea and diminution in uric acid; while with the negative insulation these changes were less marked in so far as temperature and pulse were concerned, and that the volume of the urine was increased, but no change in its organic constituents.

Within the past five years I have made a great many observations upon the physiologic effect of positive and negative insulations in order to determine if possible the therapeutic indication. Those with the positive insulation upon temperature and pulse were made at the Electro-Therapeutic Clinic of the Post-Graduate Medical School and upon urine in my private practice; while those with the negative insulation were made in the New York Electro-Therapeutic Clinic, Laboratory and Dispensary. In both instances the physiologic effect has been the same, viz., a regulation of temperature, raising a subnormal, lowering an abnormal; a regulation of the heart's action with corresponding circulatory changes, and an increase of urea and diminution of uric acid.

This is in accord with the physical laws governing the Franklinic current. It does not matter, therefore, which prime conductor, whether positive or negative, is connected with the insulating platform, nor which is grounded. As a matter of fact, the spark with the negative insulation is much less biting, sharp and stinging in character, therefore it is preferable for sensitive patients.

The patient is placed upon the platform and the machine set in motion. Patients are often timid at first and need reassuring. Everything that would jar, shock or disturb is to be avoided. It is therefore best to allow the patient to sit quietly upon the insulating platform, without placing the stand holding the electrode near the platform, or using an electrode in the hand connected with the grounded area. Profoundly

neurasthenic patients are easily alarmed and their confidence destroyed at the outset by so doing. As a patient sits upon the platform, he is in a condition of charge and may be likened to a leyden jar. The grounded area of the other prime conductor may be likened to another leyden jar. The patient's potential is raised and any movement, no matter how slight, results in some discharge or equalization of the difference of potential as he comes in contact with the stress existing in the air about him. Therefore it is impossible to regard the condition as simply one of charge, for in reality a mild convective discharge is taking place all the time. The completeness of this discharge is greatly increased by approaching the stand, holding the electrode and connected to the ground, to the patient, or by swaying the pointed electrode back and forth over the entire general surface of the body. At first the automatic application is best, for with the electrode in hand, even if great care is observed, the difference of potential is often unintentionally overcome by reduction of distance, resulting in a disruptive discharge in the form of a spark which greatly disturbs the patient.

Nervous patients will sit quietly on the platform in a condition of "charge," or even with an electrode at rest at a fixed distance, when if it be moved gently to and fro by the operator they will become exceedingly nervous and apprehensive, shrinking in a blind terror from the application. Tact and patience will later enable the operator to use the electrode for a general application or any desired localization. As confidence is established the strength and consequently the effectiveness of this convective discharge may be increased by having the patient hold in the hands the distributing chain, thereby placing him in direct connection with one prime conductor of the machine; then by approaching the electrode fixedly placed in the stand, or in the hand toward the patient, he is placed under the influence of a strong convective discharge which is known as the *needle spray*. From this we proceed to a friction spark, produced by rubbing the patient lightly with the ball electrode. This must be swiftly done or else it will be intolerable. The sensation is as of thousands of hot needles, but if well done is followed by such distinct relief in the average case as to be uncomplainingly submitted to. The effect is a revulsive one and there is sent through the peripheral nerves an influence to the nerve centers most beneficial in its effect. It is a well known fact that by peripheral excitation the nutrition of ganglionic cells is altered. Applications by means of long percussive sparks should follow upon the "charge," "spray," "needle spray" and friction spark, and often in neurasthenic patients should not be used at all. When the need for strong far-reaching muscular contractions exists, the disruptive discharge should be resorted to.

As a rule neurasthenics do not tolerate the disruptive discharge. It has too powerful a perturbatory effect, producing as it does profound contraction of muscular tissue. After its use patients are exhausted, trembling, and later on sore and bruised, unable to sleep and so profoundly shaken up as to be unwilling to submit to another treatment. This is especially true of the neurasthenics of the exhausted type. But where the condition of nerve exhaustion is really one of infection from self-poisoning, or where the nutrition state has been improved by rest, forced feeding, massage and seclusion even, without corresponding improvement in the mental manifestations, the disruptive discharge is indicated after toleration has been established. In Franklinization it is necessary to remember that exercise should always be kept within the limits of fatigue.

In all cases the treatment should be begun by means of the convective discharge. It is characteristic of living tissues to respond to stimulation, but that stimulation must not necessarily be applied in the form of profound shocks. Leave the severe measures until later in the treatment of these cases.

In sexual neurasthenia, with impotence or irritation, the localization should be to the lumbar and sacral plexuses and by means of the director electrode to the perineum carrying the electrode as far forward as the anatomic structures permit. When we bear in mind the number of nerves which center in the perineum, the beneficial reflex effects from so powerful a stimulation can readily be appreciated.

In the beginning of the treatment with the Franklinic current, in neurasthenia, the earlier seances should preferably not last more than ten minutes, as there is danger of inducing an over-stimulation. This should always be avoided. If it is found that a ten minutes' sitting is well borne, the next sitting may be slightly lengthened, and when a patient's toleration is fully established it may be extended to as much as thirty minutes. The crown electrode, fixedly attached to the electrode stand, should be placed over the hand during the first of the sitting, while the latter part of the application should be made by means of the point to the entire general surface of the body, localizing it to the spine, especially the nape. In those conditions where there is a tendency to a passive congestion of the brain, the application should be made by means of the point adjusted so as to localize the discharge to the spine, preferably the nape, in order to obtain an influence over the vaso-motor center. Sometimes in cases where such congestion exists the use of the crown electrode intensifies the discomfort and patients will complain of a full, bulging feeling in the head, which is most undesirable. When it is found that the convective discharge is well borne, which will be indicated by an improvement in the temperature, in rate and volume of pulse, in the moisture of the skin, naturally much less marked than with the disruptive discharge, also by a sense of well being and often times a sensation of quiet with a desire to sleep, then if the indication exists for a profounder revulsive effect, the friction sparks may be used to the entire general surface of the body, the localization being as before to the spine and especially to the nape for the influence upon the vaso-motor center.

As to the frequency of the application. In most neurasthenic patients and particularly the exhausted type, daily seances at first are preferable. The gain is surer and the time of treatment shortened by daily applications for the first week, two weeks, or possibly a month or six weeks. Rarely should the maximum time be exceeded however. The period of time for daily seances is to be determined by the persistence of the relief established from a single treatment; as soon as it is found that the relief established continues over twenty-four hours, then the treatment should be given every other day and subsequently as the improvement maintains itself for a longer time every third day to once a week, and finally to a discontinuance of the application. It is not possible to lay down a fixed

rule for the length of time that a patient should remain under treatment, because the recuperating power of some of these cases is very much greater than others; while their environments differ to such an extent as to modify the effect. The indications, however, for the discontinuance of the treatment, the nutritional gain and relief from symptoms are very clear.

The work can only be done slowly and as soon as the organism ceases to respond to the stimulation which has been used, and which has for the moment set up more nearly normal chemic action, then it should be repeated. Nothing is gained by waiting after that time comes, and much is lost. In the exhausted type of neurasthenics daily seances are necessary. Patients judge very clearly as to when less frequent applications are desirable. During the period of great exhaustion, physical and mental, the craving for the electro-static bath is very great. As nutritive changes are set up, followed by increased strength and energy, these patients are able to go on with comfort for a period of two or possibly three days without treatment.

Nerve cells undergo certain changes in the course of their functional activity which can only be interpreted as those of fatigue and we must remember that in neurasthenia we have to deal with nerve cells unable to get rid of fatigue or toxic products. They may be said to have undergone the "molecular or chemic variation," and as a result have an "exhausted or changed nutritional power." The whip and spur must be applied as soon as they lag. But we must understand clearly that while there is a stimulation, it is not an evanescent effect, but one that results in chemic changes tending to the establishment of nutrition and healthful function.

It must be constantly born in mind that it is work which is being done in the tissues of the body, and that the indications for the repetition of that work lies in the permanency of its results.

When we connect a sphere[4] to a terminal of an electro-static machine having an electro-motive force of say 200,000 volts, it will receive a comparatively large quantity of electricity, which will be a certain fraction of a coulomb. Suppose the charge communicated to the sphere be 1-1,000,000 of a coulomb, delivered at a pressure of 100,000 volts. In that case the work delivered to the sphere would be equal to 0.1 of a joule or 0.0738 foot pound.

This energy is received by the air and ether surrounding the sphere and held there during the maintenance of the charge. It is distributed throughout the room, although not equally. A certain fraction of a joule is charged in each cubic inch of space, the greater amount being in the immediate neighborhood of the sphere and lessening with distance from the same. Just the same thing happens with the patient on the insulating platform connected either directly or indirectly to the prime conductor. The air and ether about him receive the energy and the work in this instance is delivered to the patient, representing work of so many foot pounds or fraction thereof according to the electro-motive force and coulombs furnished. The charge is passed into the ether by electric displacement. This takes place along defined lines or curves which are called lines or curves of electro-static flux.

After ten minutes' application the patient is very apt to volunteer the statement: "I feel so quiet and sleepy." When this condition exists it is an indication for ending the seance. In my office I am in the habit of having such patients lie down or rest before leaving for their homes, and if they feel inclined to sleep encourage them to do so. Upon examination such a patient's skin will be found warm, moist in the palms of the hands, the temperature which before treatment was subnormal raised more nearly to normal, the pulse either raised or lowered, as it was slow or rapid before, but invariably with improved volume while a sense of general well-being is experienced. This beneficent influence may persist for an hour, even less, or it may last until the next day, seldom longer after a first treatment.

Rarely do I allow such patients to talk during the time of administration, and for that reason I prefer to use an electrode connected permanently with the stand, rather than one in the hands of the operator. One need only bear in mind the pathologic condition, the nature of the agent being used and what it does within the tissues, to appreciate the necessity of perfect quiet and relaxation in order to secure the best results. Work, as we have seen, is being done. Nerve cells must participate in the activity, whatever its ultimate nature, and by reason of this activity, energy is given them with corresponding ability to perform healthful functions. This should be expended in that direction and not in an effort at cerebration or muscular movement. Such effort can be made judiciously later on.

There should always follow the treatment a sense of "glow" or warmth, and a feeling of well-being. The vaso-motor nerves are stimulated, the cutaneous vessels dilated and activity of the skin established. No treatment should be persisted in when this reaction takes place. The perspiration appears first upon the palms of the hands, then upon the forehead, upper lip and finally, with the use of the disruptive discharge, all over the entire body.

In rare instances it happens that instead of the desired reaction of cutaneous vaso-motor dilatation a vaso-constriction is established with contraction of the peripheral vessels, goose-flesh and coldness of skin; the surface is pale, the patient chilly and mentally irritable, uneasy and apprehensive, indicating that the blood vessels of the brain are also in a state of contraction. Continuous treatments may abate this condition, but I have known it to persist to the extent that it seemed best to terminate the sitting, leaving the patient apparently unbenefited. This state of affairs is most commonly observable in neurasthenics. The best way to avoid it is to begin treatment very gently by aid of a mild convective discharge or "spray," and later on in the same sitting to use a stronger convective discharge or the "needle spray." This class of patients do not do so well under the disruptive discharge until the nutritional change has been established. If good reaction follows the use of the "needle spray," they may be gradually accustomed to Franklinization by means of the disruptive discharge or "spark" applied preferably to the spine at the first sittings.

It is common for neurasthenics, after the first treatment by the disruptive discharge, to experience an overpowering sense of lassitude and sometimes extreme muscular soreness. This is no doubt due to the release of degenerated and toxic substances.

Two classes of cases are appended. The first from 1

[4] Houston and Kennelly: Electricity in Electro-Therapeutics.

to 16 are dispensary patients for whom change in environments, food, habits, etc., was not made, and for whom no medication was used. The second, 1 to 8, are private or office patients for whom such medication was used as was indicated, as arsenic and iron, cascara sagrada in constipation and sodium bromid in the restless, sleepless and excitable cases. The action of Franklinism is to increase the activity of drugs and very small doses are used.

The nutritional improvement established is progressive and enduring. In my experience if overstrain of any sort induces a relapse, it is but a modification of the primary condition and disappears quickly under treatment.

One of the first results obtained from the judicious use of the Franklinic current is relief from insomnia. In five years I have not prescribed a hypnotic save on one occasion for a business man who could not take time to come for treatment. I am in the habit of giving 10 to 15 grains of sodium bromid three times daily for the first few weeks of treatment in order to prevent undue expenditure of the energy until such a time as the nutritional changes are established. In cases of obstinate insomnia among dispensary patients nothing is given or permitted save the general Franklinization with careful localization to the spire, especially the nape, and preferably with the frictional spark. The results in the latter class of cases have been good. It must be borne in mind, however, that the extremely nervous, restless and irritable type of neurasthenic patients, are more frequently met with in private than in dispensary practice.

The constipation from which neurasthenic patients in common with many others suffer is almost invariably relieved by the Franklinic treatment; the relief resulting in consequence of improved nutrition. The nutrition of the whole can not be established without the nutrition of a part. Disease is arrested, modified or cured by curing the patient.

In conclusion permit me to repeat that the grand function of Franklinization is to improve and restore nutrition not only of a part but of the whole, a function which indicates a usefulness as wide as the domain of medicine. By reason of this function Franklinization is a means of inestimable value in the treatment of neurasthenia.

DISPENSARY CASES.

Case 1.—O. F. B., male; age 56, physician, March 23, 1892. Cerebrasthenia with insomnia. Duration two years. Insomnia most marked symptom; resorted to 10 grains of sulfonal from one to four times weekly. Sleep obtained much broken, waking every hour or two. Nutrition poor.

Treatment: Franklinic current, positive insulation, frictional sparks to spine, localized to nape (insomnia), needle spray to head. Ten treatments given, extending over three weeks. The night after first treatment had seven hours of uninterrupted sleep. Improvement continued, characterized by marked nutritional gain, improved appetite and sound, refreshing sleep.

Case 2.—T. C., male; age 42; single; clergyman; June 8, 1892. Neurasthenia, cerebro spinal. Four years' duration. Insomnia; occasional frontal headache; languid and distressed, easily moved to tears; appetite fair, distress and acid eructations after eating; flatulence; bowels regular. Excessively thin.

Treatment: Franklinic current, positive insulation, needle spray to general surface, frictional sparks to spine and epigastrium. First treatment badly borne, inducing a fit of weeping. Three treatments given, extending over two weeks. Interval between the first two, twelve days. The night after the first treatment patient slept well, also the following night, and felt better during the interval. Sparks were better borne at third visit and patient expressed himself as feeling light and buoyant in consequence of the treatment. The patient made a good convalescence.

Case 3.—R. D., male; age 29; designer; Sept. 23, 1892. Neurasthenia. Duration one year. Unable to sleep until 3 o'clock in the morning; irritable and inclined to be morbid. Spine-ache, cervical, dorsal and lumbar. Appetite fair; tongue coated; digestion impaired; bowels regular. Weight 125 pounds.

Treatment: Franklinic current, positive insulation, long percussive sparks to spine and general surface, to epigastrium, also long and frictional to nape. Forty-two treatments given, extending over six months. Immediate results from first treatment; less nervous and a more buoyant feeling. At second visit reported that he was sleeping better. At end of two weeks less depressed; sleep improved, also appetite. At end of third week had gained three pounds, at end of fifth week four pounds, and at end of three and a half months seven pounds. Continued his work during treatment. Discharged, recovered.

Case 4.—W. A. J., male; age 57; married; hotel keeper; July 5, 1893. Neurasthenia. Extreme nervous shock following an accident twenty-five years prior to admission. Not well since. Complained of loss of power in left arm and hand. Pain from occiput down to lumbar enlargement; no spinal lesion. Sleeplessness.

Treatment: Franklinic current, positive insulation, long percussive sparks to entire surface of body, localized to spine and affected arm. Returned for second treatment July 7, 1893, when he complained that it had made him worse; said he felt sore and tired all over, as though beaten, but that he had slept all the previous night and again during the entire morning. This case is reported simply to indicate the necessity for a more gentle application to a neurasthenic patient at first.

Case 5.—N. C. M., female; age 27; single; saleswoman; Dec. 9, 1891. Neurasthenia with hysteric symptoms. Not well for eight years. Contracted gonorrhea eight years prior to admission; acute attack three weeks' duration; abscess in groin, opened externally; six months later pregnant, abortion procured at two months; four years ago pelvic trouble; irritable bladder from that time. In August last, gave birth to a living child; less well since. On admission headache; backache, especially lumbar and sacral, pain in right groin and dragging sensation; marked irritability of the bladder; capricious appetite; distress and heaviness after eating; constipated bowels; extremely nervous; sleepless, depressed and hysteric. Tenderness on pressure over spine, entire length. Uterus normal; ovaries neither enlarged nor sensitive; sensitiveness on pressure over fundus of bladder; general nutrition fairly good.

Treatment: Franklinic current, positive insulation, long percussive sparks to spine, localized to nape, lumbar and sacral plexuses, hepatic area and abdominal walls and entire general surface. Sixty-six treatments given, extending over eleven months. At fourth visit, sleeping better; slight improvement in digestion. Improvement slow, marked by many relapses into former condition. Eventually, however, a marked improvement in general health was noted, with increased strength, lessened nervous irritability, better self-control; regular bowels; diminished pelvic discomfort. June 10, 1892, went into the country for two months. Seven applications were given after her return, when she discontinued her visits in better health than she had been for many years.

Case 6.—C. R., male; age 32, married; carpenter; Feb. 8, 1893. Neurasthenia, with hypochondric symptoms. Duration two years. First noticed sense of pressure across chest; unable to breathe freely; breathless upon exertion. Past year difficulty of breathing, nervous, pain at back of neck, and entire length of spine; appetite fair; distress after eating; bowels regular; occasional frontal headache; depressed and self-centered; unable to work with any regularity; circulation poor; all organs interrogated, but no lesion discoverable.

Treatment: Franklinic current, positive insulation, long percussive and frictional sparks to spine and general surface, localized to nape and to epigastrium. Eight treatments were given extending over one month. At second visit felt much better. At fifth visit circulation much improved. At seventh visit improvement much more marked; no depression; "catch" in back gone, also difficulty in breathing; no epigastric heaviness. One more treatment given and patient discharged, recovered.

Case 7.—J. R., male; age 29; married; butcher; March 24, 1893. Sexual neurasthenia. Not well for a year and a half. Morbid, depressed and self-centered. Twitching movement, first in left shoulder, then in right, then in back of neck, then in eyes. No trouble when quiet and not at work. Unable to "fix his mind" on anything; general health fair; appetite

good; bowels regular; sense of numbness front of thighs; knee-jerk normal. History of gonorrhea before marriage. Sexual excesses since.

Treatment: Franklinic current, positive insulation, long percussive sparks to spine and general surface, localized to lumbar and sacral plexuses, anterior surface of thighs, and with director electrode to perineum from anus to scrotum. At third visit reported much better after second treatment, with diminution of distressing sensations. At fourth visit less dejected, felt stronger. At fifth visit no muscular twitchings. Eight treatments given extending over one month and at last visit, April 24, 1893, could fix his mind on what he read or was doing; no muscular twitching, no distressing symptoms, skin clearer; expression bright and hopeful.

Case 8.—S. F., male; age 29; single; brass-polisher: July 10, 1891. Sexual neurasthenia; masturbation, nocturnal emissions, pain in back, lumbar and sacral; headache; appetite good; digestion fair; complexion muddy; anemic; heart irregular; no murmur, palpitation; sleepless.

Treatment: Franklinic current, positive insulation, long percussive sparks to spine and general surface, localized to nape, lumbar and sacral plexus, and with director electrode to perineum from anus to scrotum. Nineteen treatments given extending over four months. An interval of twelve days between first and second treatments; sleeping better; no emissions. Improvement continued, and on Nov. 16, 1891, visits discontinued, general health improved, sleeping well, relieved of pain in back and head. Second admission Sept. 1, 1893; well for one year after treatment. On admission, pain in back, lumbar and sacral—also in right sciatic; tenderness on pressure at sciatic notch, middle of thigh, popliteal space, in knee, calf of leg and ankle; sensation as though asleep; insomnia; nervous; badly nourished; bowels regular. Eight treatments given extending over seven weeks. Relief established at once and continued. Discontinued visits Oct. 20, 1893, recovered.

Case 9.—S. E., female; age 38; widow; seamstress; Sept. 6, 1893. Neurasthenia; three years duration; nervous, easily depressed; morbid fears; backache—sacral. Sleep broken, bad dreams; buzzing noise in left ear; afraid of dying; appetite good, gaseous eructations; bowels regular; weight 110¾ pounds.

Treatment: Franklinic current, positive insulation, needle spray to head and general surface for fifteen minutes with a few long percussive sparks to spine. Spray used at first to establish confidence. Nine treatments given extending over six weeks. At second visit looked brighter. At third visit patient said she was better. At fifth visit less depressed. Able to come to clinic alone. Weight 113½ pounds, gain 2¾ pounds. Digestion improved; daily movements; and on Oct. 20, 1893, patient discontinued visits. Improved.

Case 10.—B. T., female; age 20; single; reader; April 16, 1894. Neurasthenia: "irritable spine for eight years;" tenderness on pressure in dorsal spine especially about midway. Tired aching feeling in muscles of neck and shoulders; pain extended down both arms; legs and arms felt as though asleep; worse at night, sleepless and restless; depressed, badly nourished; gaseous eructations; irregular bowels.

Treatment: Franklinic current, positive insulation, long percussive sparks to spine and general surface localized to sensitive area in spine, muscles of neck, shoulders and arms. Sixteen treatments given extending over twelve weeks. Relief from first treatment lasted three and a half hours. Nutritional gain established; relief from pain, aching and weariness; bowels regular; sleeping well; no depression. Recovered.

Case 11.—M. K., female; age 26; nurse; April 8, 1895. Neurasthenia; duration six months; extremely nervous; weak; palpitation; gaseous eructations; bowels regular; amenorrhea for two months; pain in left ovarian region; general sense of exhaustion; distressing dreams; backache; poor circulation; irritable cough. Sensitiveness on pressure at lumbar spine. Mucous membrane anemic; heart and lungs normal.

Treatment: Franklinic current, positive insulation spray to entire general surface over a period of three weeks. Immediate result from first treatment; slept better; after fifth treatment felt very well; appetite good. To the sixth and seventh treatments were added long percussive sparks to entire general surface, localized to spine, lumbar and sacral plexuses and abdominal walls. Recovered. April 8, 1896, patient has kept well during the year and able to work.

Case 12.—K. L., female; age 29; married; April 19, 1895. Neurasthenia. Pain and weariness at back of neck: insomnia; headaches; nausea and occasional vomiting; hysteric attacks; neuralgic pains; prolapsed ovary removed two years since; less pain since operation; laceration of the cervix uteri.

Treatment: Franklinic current, positive insulation, spray to entire general surface for fifteen minutes, localized to spine and ovarian region. Three treatments given extending over a period of two weeks; to the third treatment was added long percussive sparks localized to lumbar and sacral plexuses, hepatic area and abdominal walls. With the first treatment, relief from constipation; head better; improved.

Case 13.—J. F. L., male; age 31 years; married; Sept. 6, 1895. Sexual neurasthenia with impotence. Twelve years ago gonorrhea, followed by stricture. Constant irritation of prostate; frequent urination; deficient muscular power; anemic; voracious appetite; bowels regular; drinks and smokes to excess; depressed; morbid fears; easily fatigued. Genito-urinary organs normal.

Treatment: Franklinic current, negative insulation, long percussive sparks to entire general surface, localized to spine and with director electrode to perineum. Three treatments given extending over a period of six weeks; improved.

Case 14.—N. female; age 41 years; widow; thirteen children; Sept. 20, 1895. Neurasthenia; depressed; introspective; tired in the morning; throbbing pain under right scapula and precordia; dizziness; bowels regular; heavy feeling in epigastrium after eating; pain and tenderness in knees; very nervous; sharp pain in left side during last menstruation; weariness and aching and a sense of weakness in cervical region extending into arms; anemic.

Treatment: Franklinic current, negative insulation, spray to entire general surface for five minutes, followed by long percussive sparks to spine, hepatic area, abdominal walls, epigastrium and extremities. Fifteen treatments were given extending over a period of two and one-half months with marked improvement from the first; pain in shoulder and knee relieved; marked nutritional gain; improved circulation; increase in weight and disappearance of symptoms.

Case 15.—M. F., male; age 41 years; married; farmer; Sept. 15, 1895. Neurasthenia; morbid fears and depressed. Eight years since had gonorrhea. No symptoms except dragging sensation in perineum and testicles. No lesion other than a perineal eczema.

Treatment: Franklinic current, negative insulation, long percussive sparks to entire general surface, localized to spine, especially to lumbar and sacral plexuses also with director electrode to perineum. Twelve treatments given extending over nine and one-half weeks; after second treatment less discomfort. Disappearance of depression, morbid fears and tendency to introspection. Recovered.

Case 16.—J. P., male; age 25; single; wire weaver. Oct. 11, 1895. Neurasthenia, sexual with impotence. Duration four years; weak feeling; short breath on exertion; has had gonorrhea; painful micturition, irregular in quantity; impaired vision; falling of hair; seminal emissions two or three times a week and no muscular power; varicose veins of scrotum; morbid fears, depressed; introspection.

Treatment: Franklinic current, negative insulation, long percussive sparks to entire general surface localized to spine, especially lumbar and sacral plexuses and with director electrode to perineum. Nine treatments given extending over a period of eighteen days. Recovered.

Case 17.—C. W., male; age 29 years; married; laborer; Oct. 24, 1895. Sexual neurasthenia. Five years ago sexual indulgence excessive; for last four years mucous discharge from urethra; last six months backache; headache constantly for last two months. For one year sexual desire diminished; tired and drowsy on rising; forgetful and despondent; bowels constipated.

Urine analysis: Specific gravity 1012; granular casts; urea 1.2 per cent.; acid reaction.

Treatment: Franklinic current, negative insulation, long percussive sparks to entire general surface, localized to spine, especially to lumbar and sacral plexuses, hepatic area and abdominal walls and with director electrode to perineum. Four treatments extending over a period of one week; relief from pain in back; stronger. Urine analysis, specific gravity 1024; acid; no casts. Urea 2.4 per cent.

OFFICE CASES.

Case 1.—A. H., March 12, 1895; age 51; widow; superintendent of hospital. Neurasthenia; duration four years; menopause at 49; anorexia; nausea and vomiting; flatulence; constipation alternating with diarrhea; headache; spine ache; cervical and dorsal; insomnia; nervous and depressed.

Treatment: Franklinic current, positive insulation, needle spray to entire general surface, localized to spine and epigastrium for fifteen minutes. Twenty treatments given extending over a period of one and one-half months. To the sixth and following treatments were added long percussive sparks to spine, nerve trunks and distribution. April 22, 1896. This

patient has been actively at work during the past year and reports to me under present date that she is well.

Case 2.—Mr. H.; Feb. 14, 1895; age 40. Neurasthenia; duration two years; morbid; depressed; nervous and melancholy; insomnia; anorexia; impaired digestion; constipation; thin; impaired strength.

Treatment: Franklinic current, negative insulation, needle spray with crown electrode for ten minutes and long percussive sparks to entire general surface; twenty treatments given extending over a period of two months. After the first treatment no change; looked cold, wan and apprehensive; reaction not good. The disruptive discharge badly borne and discontinued; second treatment needle spray to entire general surface for fifteen minutes; to third treatment added frictional sparks localized to spine from nape to lumbar enlargement for two minutes. At tenth treatment long percussive sparks given. Patient did not sleep so well. No doubt over-stimulated by the action of the sparks, but as in my judgment the time had come when the disruptive discharge was indicated I persisted in the use of long percussive sparks to the entire general surface localized to spine, especially nape, lumbar and sacral plexuses, hepatic area and abdominal walls. Marked and continued improvement; April 9, almost complete disappearance of symptoms; sound and refreshing sleep; good appetite; good color; increased strength; less nervous; bowels regular; slight gain in weight.

Case 3.—Mr. J. B. H.; March 19, 1895; age 48. Neurasthenia. Within the last ten or fifteen years has broken down several times from over-strain; two days since felt worse than usual, took a drink of whisky, went out, fell down, got up and wandered about, knowing nothing of his whereabouts. Not an intemperate man. Congestive condition at base of brain; sense of fullness in left ear and on left side with inability to move head around quickly without pain; vertigo, sometimes falls; when walking sense of falling; two years ago marked weakness of left side amounting to paresis for twenty-four hours; gradually improved; marked tremor of right arm and hand; insomnia; exaggerated mental activity; knee-jerk slightly diminished; general health good; some backache, lumbar and sacral; is obliged to consider his coördination, pupils respond to light and to accommodation; far sighted.

Treatment: Franklinic current, positive insulation, needle spray for fifteen minutes, followed by long percussive sparks to entire general surface, localized to spine, from occiput to lumbar and sacral plexuses, sciatic nerves and distribution; frictional spark to nape. Treatment induced free perspiration followed by relief from pressure at base of brain. Twenty-two treatments given extending over a period of six weeks. Improvement with first treatment; improvement continuous, and after one month relieved of former symptoms and better than before the acute attack in March. May 29, recovered.

April 22, 1896, patient has been well during the year.

Case 4.—J. W. P. Oct. 26, 1893. Male; age 41; single; teacher; neurasthenia with hypochondriac symptoms. Duration two years; sense of dizziness at first not localized, now occipital; pressure, sub-occipital; numbness, creeping in left side, arm, leg and side of body; sometimes on right side but not to such an extent as on left; intolerable sleepiness in the afternoon with slight rise of temperature; queer feeling in head relieved by counter pressure; darting pain in course of spinal accessory nerves, increased by excitement; constant consciousness of a feeling as though force pump sending blood down heels; excessively nervous; sensation of "lump" midway dorsal spine; feels suddenly now and then a touch here and there, sometimes hot and cold, then gone; sees double disks at times which coalesce; eyes astigmatic; sleeps very well, except when under excitement; dreams; profoundly depressed; great nervous irritability; morbid fears, thinks he will become insane; appetite good, gaseous eructations; no heaviness; bowels regular; knee jerk normal; stands and walks well; no incoördination; pupils respond to light and accommodation; palpitation on effort or with emotion.

Treatment: Franklinic current, positive insulation, needle spray for fifteen minutes, followed by long percussive sparks to entire general surface, localized to spine especially nape for five minutes. Forty treatments given extending over a period of six months and twelves days. Following first treatment relief of discomfort in head which lasted nine hours. November 21 no longer thinks of becoming insane; amelioration of pain in back of neck. Subsequently slight exacerbation due to an attack of "grippe." After recovery from "grippe" improvement continued; floor and ground do not wave under him; eyes accommodate better. April 29: Improvement established has been maintained during the past two years and a half; no return to former conditions.

Case 5.—D. I. P. Dec. 12, 1892. Female; age 36; married. Seven years since acute nerve exhaustion; since then backache, sacral; irritable bladder; leucorrhea; appetite capricious; nausea; distress and heaviness in stomach; flatulence, intestinal; constipation; hemorrhoids; headache, neurasthenic helmet and sub-occipital; sensitiveness to noise; emotional, easily moved to tears; profound depression; confusion; weariness in head; possessed of fear all the time; afraid to go out alone; thin, pale. Examination: immense cluster of hemorrhoids, external, largest size of walnut, ulcerated; half a dozen smaller ones; lacerated cervix; endometritis; hyperplasia; anemia; heart and lungs normal. Treatment: Franklinic current, positive insulation, spray to entire general surface with a few sparks to spine at first. Subsequently long percussive sparks to entire general surface, and frictional sparks to spine. Fifty-one treatments given extending over a period of six months and fifteen days; after nine days no depression; no headache; nervous fears very much less; appetite better; bowels acting better; from Dec. 12, 1892 to Jan. 5, 1893 gained three and one-third pounds; passed first menstrual period without local pain; sense of pressure and pain in varicose veins of right leg, usually exaggerated at menstrual period, markedly less. After one month's treatmeat she came alone to the office, first time she had gone out without some member of the family in six years; continued to improve so far as neurasthenic condition concerned notwithstanding the fact that she was absent from regular treatment from January 18 to February 20, during which time I operated on hemorrhoids. By the middle of March able to work and assume the care and responsibility of her family; May 9, normal movements for past ten days, before no action without medicine. After symptomatic relief was established in consequence of the nutritive changes set up by general Franklinization, uterine treatment was given with the continuous and induced currents according to indications. Recovered. October 1894, returned with nervous symptoms due to fright and excitement. After two week's treatment restored to former condition.

Case 6.—S. V. A., Oct. 5, 1895. Female; age 48; teacher; neurasthenia; duration fourteen years, broken down at that time; rested one year; menopause five years since; better at times; appetite fair; no indigestion; bowels regular; pain back of neck extends at times over head; occasional supra-orbital pain; insomnia; extreme nervous irritability; pricking sensation all over, especially calves of legs; morbid and unreasonable over little things; feels like crying; bronchial irritation with cough; post-nasal discharge; slightly deaf; anemic.

Treatment: Franklinic current, positive insulation, spray to entire general surface for ten minutes, frictional sparks to spine, especially nape. Fourteen treatments given extending over a period of one month and four days; felt better from first treatment. Treatment suspended for a month or two; recommenced and continued once a week to date. Marked nutritional improvement; able to keep at work all winter. Relief from all distressing nervous and mental symptoms.

Case 7.—R. W. May 2, 1895. Female; single; neurasthenia with hysteric symptoms. Duration nine years; eight years since both ovaries and tubes removed; history of abscess since operation, discharged per rectum, pus, no blood; occasional backache; intestinal flatulence; constipation; during winter acute attack of stomach and intestinal indigestion; tired head; sensitiveness on pressure over cervical and lumbar vertebræ; paresis of facial muscles in October; insomnia; depressed; nervous; irritable; self-centered; excessively thin; worn and ill looking; worse in the morning.

Treatment: Franklinic current, positive insulation, needle spray to entire general surface, localized to spine and right sciatic. Thirty-six treatments given extending over a period of two months. After a week improved sleep; bowels more regular. To eighth treatment added long percussive sparks to spine, lumbar and sacral plexuses, sciatic nerves and distribution, to epigastrium and abdominal walls. Improvement continuous; gained eighteen pounds under treatment.

Case 8.—A. H. W. March 16, 1893. Female; married; age 34. Neurasthenia. Not well since first confinement eight years ago; unable to stand; conscious of pelvic organs; bearing down; veins of both legs, anterior surface, enlarged. February 1891, operation on cervix and perineum. Backache constant, vesical pain; leucorrhea, increased by exertion or undue fatigue; post-menstrual exhaustion; headache; fullness of head; pressure at nape; distress in spine, especially dorsal; insomnia; nervous and excitable; irritable; despondent; appetite capricious; flatulence, gastric; constipation; anemia; circulation poor; appearance of faulty elimination.

Treatment: Franklinic current, positive insulation, spray to entire general surface for ten minutes, sparks to spine. At subsequent treatments long percussive to entire general surface localized to spine. Forty-five treatments given extending

over a period of four months; marked improvement from the outset. After two months walked one and one-half miles and took a bicycle lesson of twenty minutes without fatigue; no backache save when over-fatigued; appetite good; bowels regular. Recovered. June 28, 1894, confined.

April, 1895, operation, curettement and trachelorrhaphy. May 9, 1895, came under writer's care again. Incomplete union at site of highest stitch right side of cervix; perineum extremely sensitive; pelvic congestion; vaginal walls relaxed; anterior wall prolapsed; constant sense of discomfort, bowels constipated; liver inactive; skill sallow and pigmented.

Treatment: Franklinic current, positive insulation, needle spray to entire general surface, localized to spine for twenty minutes. Eleven treatments given extending over a period of one month and three days with disappearance of symptoms, as well as improved local conditions.

HOMICIDE IN THE UNITED STATES.

Read before the American Academy of Medicine.

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Murders are of very great frequency in this country. The number reported last year was 10,500, an enormous figure! We might, if there were not some reasons against it, take this number as the annual average, which in most countries is a fairly constant quantity. But here, owing to some conditions that I shall endeavor to particularize, the amount of homicide in any year, taken as a standard, does not give us the least reason for predicting that the succeeding year will be marked by a similar number of murders, neither many more nor less. In 1885, for instance, the homicides reported numbered 1,808; in 1890, 4,290; in 1894, 9,800, and I have just mentioned 10,500 in 1895. That is to say, there was nearly six times as much homicidal crime reported last year as in 1885, an increase almost in arithmetical ratio. In a word, the population loses every year from murder as much as from a battle or a plague. Such an amazing development of murder has never before been observed in any other country. There must be some especial cause or causes at work to produce such a result, but, before entering upon a discussion of these, let us undertake a comparative view of the above figures. We shall thus be enabled fully to appreciate their gravity. Let us take as affording a sufficiently vivid comparison, the amount of homicide perpetrated in war. The total killed in battle on the Federal side during the late war was in round numbers 49,000 (Medical and Surgical History of the Rebellion). That is an annual average of little more than 10,000 (the time being a period of nearly five years), or about the same as the total number of homicides reported last year. During the Franco-Prussian war of 1870, the Germans lost in battle 17,500 men, a figure that sinks into insignificance beside our total of homicidal crime, for the conditions favoring homicide in war are or ought to be vastly greater than the conditions favoring it in peace. (Oettingen, die Moralstatistik, p. 729.)

Again, let us compare last year's total of murders with the annual average of other countries. In order to make this comparison as absolutely true as possible, I shall adopt the method of estimating the total amount of murder during any given period, recommended by Bosco, who has studied this subject with the greatest care. In his own words, his method is described as follows: "As the composition of the population, with respect to age, varies in different countries, and as it has to be remembered that all the population under ten years of age has no share, at least under normal conditions, in the crime of murder, it has seemed to me a more exact method to calculate the proportion of murders to the inhabitants who are over ten years of age than to include the total population." (Quoted by Morrison: Crime and its Causes, p. 30.) I may mention here that with respect to this country, such a method of calculation is extremely difficult. The composition of the population varies greatly; in some States there is undoubtedly a preponderance of adults; in others, on the other hand, the proportion of children under 10 years of age is probably very high, in such regions as Pennsylvania and New York, for instance, where the birth rate is respectable and the casualties, inevitable amid such enormous trade and manufacture, are great and compose very material losses of adult population, we have powerful causes tending to raise the proportion of children under 10. It might be supposed that immigration, including chiefly adult males, would neutralize this result. Doubtless it does modify the proportion of children to adults, but not, I think, to any great extent. In fact, considering the high birth rate in those sections that receive the most immigration, and considering, too, that the rate throughout the country is normal, I think we shall not be far wrong in supposing that the proportion of children under 10 years of age is as great here as in England or Germany. Supposing then the population of the United States at the present day to be 65,622,000, which is reached by calculating the excess of births over deaths and the amount of immigration since the last census, when the population was put at about sixty-two millions, and taking off 20 per cent. of the whole as representing the population under 10 years, we ought to get the total population which under normal conditions, as Dr. Bosco puts it, might be physically able to commit murder. The total thus calculated is 52,478,000. Taking last year's number of homicides, and calculating the rate per 100,000 of population we get the high proportion of 20. Comparing this rate with the rate in other countries, according to Bosco's tables, we find that homicide is a fourth higher here than in Italy, nearly twice that of Spain, nearly five times that of Austria, nine times that of France, nearly twenty times that of England, Scotland or Germany. All this is bad enough. In order, however, to bring this high rate into greater relief, let us compare it with the rate in India. We have, as Mr. Morrison tells us, excellent statistics of Indian crime. It is, besides, a country that in point of size and severity of climate, resembles our own. We might, if it were not for some social prohibitive causes, expect a high rate of murder. But what is really the fact? In Mr. Morrison's words, "India stands to-day in the proud position of being more free from crimes against the person than the most civilized countries of Europe." Astonishing as it seems, India with its 185,000,000 of population over 10 years of age has an annual average of but 1,930 cases of homicide, scarcely one-fifth of the number last year in our population of 52,000,000! In other words, in India with its enormous population the rate of homicide per 100,000 of population is but 1.31, a percentage unmeasurably inferior to ours. Mr. Morrison ascribes this low rate of homicidal crime to the prohibitive influence of caste, but before undertaking a discussion of this subject, let us look at these figures from another point of view. The annual average of homicide in India is the whole number of cases

of murder reported and presumably the whole number committed, which is not the case with regard to this country. There is, therefore, this remarkable fact established with respect to crime in India, that we really know the amount of murder committed annually; not approximately (as we do of England and the United States) but as nearly as possible absolutely, and this amount, considered from this point of view, is but one-half that of England and but 1-34 that of the United States. I can not do better here than put the matter in Mr. Morrison's words: "The number of cases of homicide in India committed by persons over 10 years of age and reported to the police is smaller per 100,000 inhabitants than the number of cases of the same nature *brought up for trial* in England (italics mine). In order to appreciate the full importance of this difference it has to be remembered that in England a great number of cases of homicide are reported to the police for which no one is apprehended or brought to trial. In the case of the notorious Whitechapel murders, which horrified the country a year or two ago, no one was ever brought to trial; hardly any one was arrested or seriously suspected. These crimes and many others like them materially augment the number of homicides reported to the police, but they never figure among the cases annually brought for trial before assizes. As a matter of fact no one is ever tried in more than one-half of the cases of homicide reported to the police in the course of the year. In the year 1888, for instance, 403 cases of homicide were reported to the police in England and Wales; but in connection with all these cases only 196 persons were committed for trial. In short, double the number of homicides are committed as compared with the persons tried; and if a comparison is established between India and England on the basis of homicides reported to the police, the outcome of such a comparison will be to show that there are annually more than twice as many murders committed per 100,000 inhabitants over the age of 10 in England than there are in India."

I have said that in the United States there are every year thirty-four murders where there is one in India. The real number is probably much higher. But it is, unfortunately, very difficult to calculate this number, except approximately, for statistics of the number of persons tried as compared with the number of murders committed are, as far as I know, not to be had. But, fortunately, we possess statistics of the number of executions, and we may draw some inference as to the amount of murder in the country by ascertaining the proportion of executions to cases reported, and comparing this proportion as it exists in various countries. For it is generally known that the frequency of capital punishment is a tolerably accurate indication of the amount of murder prevailing; a high rate in the one being accompanied by a high rate of the other. If, then, we find that the number of executions, as compared with the number of cases of homicide, is relatively large, we might infer that murder in the country under consideration is really, and not apparently, of correspondingly common occurrence. And, incidentally, finding the proportion of executions to cases reported we might be able to estimate the number of cases tried, a better method it would seem, according to Bosco and Morrison, of calculating with accuracy the absolute amount of homicide in the country during a given period.

In such an inquiry we have to remember that the proportion of executions to trials must be small, unless we suppose that the cases of homicide reported are cases of willful murder—a rash supposition that may be dismissed. And we must also ask ourselves whether the death penalty, for any reason in law, is likely to be enforced in some countries in cases where in others it would not. Doubtless there is a difference in this respect between countries like England and the United States and countries like Germany and Austria. But this difference need not occupy us particularly if we find that the proportion of executions to cases reported is so much greater in the former countries as to outweigh any effect that the superior mildness of Continental law in this respect may have. Nor, again, need we be scrupulous in affirming our comparison if we find that with this higher proportion of executions there is admittedly a greater laxity in the administration of the criminal law, a laxity that may, and does, materially decrease the number tried, if not the very cases that would, under a better condition of things, augment the total of executions.

To proceed then with our view, we may take Germany, as furnishing of all other countries the most striking example of a high rate of cases convicted and an exceedingly low rate of executions. In that country, as in India, it is probable that very few cases are reported that are not tried and very few tried that are not convicted. In Germany, for instance, of 567 cases of homicide in 1882, there were 476 convictions and but 9 executions, or .02 per cent. of convictions. In England in 1891, 19 persons suffered the extreme penalty, about 12 per cent. In 1890, in the United States, there were 4,290 cases of homicide reported and 102 executions by law. Assuming that convictions amounted to one-fourth the number of murders reported, a generous estimate, and taking from that 127 cases summarily executed without trial, we have left 948 convictions, of which 102 or 10.7 per cent. were condemned to death. Thus, in other words, in Germany, where convictions are relatively frequent, we see a correspondingly low percentage of death sentences, while on the other hand, in England and the United States, where convictions are not so common, the amount of capital punishment is considerable, including, in fact, in England, about one-seventh of the cases tried. Even if we should dismiss the cases of murder reported in the United States on the ground that the report is inaccurate, and take merely the combined legal and illegal executions for a single year, the 303 of last year, for instance, as furnishing an estimate of the amount of murders in the country (it being undeniable that an execution, whether legal or illegal, is as good an indication as a trial that a murder has been committed), we should still have to record an enormous excess of homicide here over other countries. For what are 19 executions or 9, in comparison with 303?

It is impossible in fact not to believe that the high proportion of death sentences is an intimation not only of the gravity and prevalence of murder, but of some defect in the machinery of the criminal law, influencing judges to extreme severity in punishing crime when proved, and, not unlikely, as a means of consciously or unconsciously satisfying public vengeance. We might attain a stronger conviction of the truth of the foregoing estimate by comparing the numbers convicted with the numbers tried. There is a wide difference in countries in this respect. A very able student, Mr. Morrison, whom I have several times

quoted, observes: "In some countries very few convictions may take place in proportion to the number accused, while in other countries the proportion may be considerable. In other words, in order to arrive at an approximate estimate of the amount of murders committed in a country, we must consider how many cases of murder have been tried in the course of the year. It very seldom happens that a person is tried for this offense when no murder has been committed, and it may therefore be assumed that the crime has taken place when a man has to stand his trial for it. Estimating, then, the prevalence of murder in the various countries by trials, rather than convictions, it will be found that Germany, with a much larger percentage of convictions than England, has just as few cases of murder for trial. And the reason the number of convictions, as between the two nations, differs, arises from the fact that a prisoner's chance of acquittal in England is 100 per cent. greater than it is in Germany. It is not, therefore, accurate to assume that a greater number of murders are committed in Germany than in England because a greater number of persons are annually convicted of this crime; all that these convictions absolutely prove is, that the machinery of the criminal law is more effective in the one country than the other. To take another instance, more persons are annually tried for murder in Ireland than in France; but more cases of conviction are recorded in France than in Ireland. These contrasts show that, while the French are less addicted to this grave offense than the Irish, they are more anxious to secure its detection, and that a greater body of public opinion is on the side of law in France than in Ireland. . . . While thus showing that the number of trials for murder is the best test of the prevalence of this offense, it is not meant that the test is in all respects indisputable. At most it is merely approximate. One obstacle in the way of its entire accuracy consists in the circumstance that the proportion of persons tried, as compared with the amount of crime committed, is in no two countries precisely the same. In France, for instance, more murders are perpetrated for which no one is ultimately tried, than in Italy or England; that is to say, a murderer runs more risk of being placed in the dock in this country than in France. But the difference between the two countries is again to a great extent adjusted by the fact that once a man is placed in the dock in France, he has far less chance of being acquitted than if he were tried by English law. On the whole, therefore, it may be assumed that the international statistics of trials, corrected when necessary by the international statistics of convictions, present a tolerably accurate idea of the extent to which the crime of murder prevails among the nationalities of Europe."

In order to estimate the number of trials for murder in this country, and apply this test in its rigor we must look, in default of better means, at the statistics of our prisons. We can find these in the Compendium of the last census, namely for 1890. In that year the number of persons in prison for homicide was 7,500. As there reported in the years 1885–90 an annual average of more than 3,000 cases of homicide, it is evident at once that the proportion of persons tried and convicted of that crime as compared with the number of cases reported, is insignificant. Assuming that the persons in prison for homicide in 1890 were all recruited from the cases extending over the years 1885–90, which is hardly true as some of them must have been imprisoned at an earlier date, and assuming that as many cases were reported as were tried, during those years, we still have a large excess of trials over convictions, and, what is worse, we must conclude that a considerable number of undoubted murders, supposing that some one was tried for them, are not represented in the numbers of the prison population, nor can it be supposed that this deficiency is made up by the number of persons executed, a number far too small to make good the discrepancy. There is, of course, in every country an excess of trials over convictions. In England in the years 1882–6, 1.6 per cent. of the population was annually tried for murder and 0.76 per cent. convicted. In Germany during the same period 1.61 per cent., were annually tried and 1.35 per cent convicted. In the United States, basing our estimate on the number in 1890, and taking the annual average of committals during the years 1885–90 as 1,250, or in other words taking this as the number of convictions, although the real number must obviously be much lower, and assuming that the trials averaged half the cases reported during that time, we have an excess of trials over convictions of one-fifth; an excess of cases reported over convictions of twelve-fifths. Lastly, to take India, as a country most like our own in respect to climatic conditions, the most powerful influences in causing homicidal crime, we find the annual average of cases reported to be 1.31 per cent. and the annual average of convictions 0.46 per cent., an excess of cases reported over convictions of 2.8 or fourteen-fifths, an instructive result that points to a mild administration of the criminal law in India, a result too that incidentally shows us that a laxity in this respect is not necessarily in that country a provocative of crime.

And this brings us to the curious inquiry as to the causes of the prevalence of murder. We have just seen that though in India, as in England, the percentage of convictions is not high; yet India, as compared with England and the United States, is singularly free from crimes of blood. A hot climate, as Professor Ferri has shown, is one of the most potent causes of the prevalence of homicide, and we might expect therefore that India, as compared with England, would show a high percentage of murder. Yet this is not the case. As compared to the United States, where the climate is marked by harsh extremes and often unexpectedly severe weather, we might look for a lower percentage, but this too is far from being true. To what, then, is the difference due? It is most plausibly argued by Mr. Morrison and Sir William Hunter that the immunity of India from crimes of violence is due to the influence of caste; and, while, admitting the unfavorable effects of the Indian climate, they believe that caste is powerful enough to repress those effects. By looking at their arguments, we shall get I think, not only the most just and philosophical view of some of the deeper and more persistent causes of the crime of murder, but also an illustration, an analogy that may usefully be applied in determining the causes of murder in our own country. Let us take Mr. Morrison's view first. "The peculiar structure of society," he says, "is unquestionably the most satisfactory explanation of the high position occupied by the inhabitants of India with respect to crime. The social edifice which a people builds for itself is among all civilized communities a highly complex product, and consists of a great agglomera-

tion of diverse materials. These materials are partly drawn from the primitive characteristics of the race; they are partly borrowings from other and contiguous races; they are to a considerable extent derived from natural surroundings of all kinds; and in all circumstances they are supplemented by the genius of individuals. In short, all social structures, when looked at minutely are found to be composed of two main ingredients—race and environments; but these two ingredients are so indissolubly interposed that it is impossible to say how much is to be attributed to the one, and how much to the other, in the building up of society. But if it is impossible to estimate the value of the several elements composing the fabric of society, it is easy to ascertain the dominating idea on which all forms of society are based. That dominating idea, if it may for the moment be called such, is the instinct of self-preservation, and it exercises just as great a power in determining the formation and play of the social organism as it exercises in determining the attitude of the individual to the world around him. In working out the idea of self-preservation into practical forms, the social system of most people has hitherto been built up with a view to protection against external enemies in the shape of hostile tribes and nations; the internal enemies of the commonwealth—the thieves, the housebreakers, the disturbers of public order, the shedders of blood, the perpetrators of violence—have been treated as only worthy of secondary consideration. . . . . The structure of society in India is, however, an exception to the general rule. External security, or in other words, the desire for political freedom has, to a great extent, become extinct in wherever the principle of Brahmanism has succeeded in taking root. These principles have been operating upon the Indian mind for thousands of years; their effect in the sphere of politics excited the wonder of the ancient Greeks, who tell us that the Indian peasant might be seen tilling his field in peace between hostile armies preparing for battle. A similar spectacle has been seen on the plains of India in modern times. But Brahmanism, while extinguishing the principle of liberty in all its branches, and exposing its adherents to the mercy of every conqueror, has succeeded, through the caste system, in bringing internal order, security, and peace to a high pitch of excellence. This end, the caste system like most other religious institutions, did not and does not directly have in view; but the human race often takes circuitous routes to attain its ends, and while apparently arriving at one object, is in reality securing another. The permanent forces operating in society often possess a very different character from those on the surface, and when the complicated net work in which they are always wrapped is stripped from off them, we find that they are some fundamental human instincts at work in disguise."

"These observations are applicable to the caste system. This system, when divested of its externals, besides being an attempt to satisfy the mystic and emotional elements in the Indian heart, also represents the genius of the race engaged in the task of self-preservation. The manner in which caste exercises this function is thus described by Sir William Hunter. 'Caste or guild,' he says, 'exercises a surveillance over each of its members from the close of childhood until death. If a man behaves well, he will rise to an honored place in his caste; and the desire for such local distinctions exercises an important influence in the life of a Hindoo. But the caste has its punishments as well as its rewards. These punishments consist of fine and excommunication . . . . . Anglo-Indian law does not enforce caste decrees. But caste punishments exercise an efficacious restraint upon unworthy members of the community, precisely as caste rewards supply a powerful motive of action to good ones. A member who can not be controlled by this mixed discipline of punishment and reward is expelled, and, as a rule, an outcaste is really a bad man. Imprisonment in jail carries with it that penalty, but may be condoned after released by heavy expiations.'"

"These remarks of Sir William Hunter afford an insight into the coercive power exercised by the caste system on the Indian population. Without that system it is probable that the criminal statistics of India would present as high a proportion of crimes of violence and blood as now exists among the people of Southern Europe. But with that system in active operation, the evil influence of climate is completely neutralized, and India at the present moment enjoys a remarkable immunity from violent crime."

This admirable passage from Mr. Morrison displays in a very clear light the peculiar structure of Indian society. The chief difference from our present point of view between that society and ours is the fact that here the instinct of self-preservation has given away, as it has not in India, to the desire of possessing extreme political freedom. Here internal security, as compared with personal liberty, is of little importance; and although owing to the geographical position of the country the danger of its being disturbed by external foes is, indeed, very remote, yet, it does not seem so to the people, as the present prominence of the Monroe doctrine shows, who often are disposed to believe their external security is in jeopardy, not so much, it is true, from an invasion of armed enemies, as from the importation of ideas, hostile to the prevailing conceptions of personal liberty. As there is not this danger, except in the most remote degree, it would seem expedient to the people to turn their attention to the consideration of their internal security; but it being well understood that the attainment of a great degree of internal security would mean sacrifices of individual liberty, it is scarcely to be expected, the popular mind being really at bottom extremely conservative, that any change of an opinion in this respect will soon take place. In fact the importance of external security is as much exaggerated here as it is kept in abeyance in India, and thus we have the curious contrast of two countries, alike in possessing a severe climate, alike in variety and greatness of natural surroundings, yet presenting the widest differences socially and with respect to crime.

They are also utterly dissimilar with regard to industrial activity, which here is enormous and in India comparatively inconsiderable. The difference is important and, as it will be seen, partly explains the low proportion of Indian crime. For crime is found, according to the exact researches of Ferri and of Tarde, to be growing in steady relation to the growth of commercial enterprise; and, it is also now a matter of certainty that not only is there this close connection between crime and industrial enterprise, but there is besides, as Féré has shown, a triple relation established here, between crime, commercial activity, the *surmenage* of modern life and nerve disease. In other words Tarde has demonstrated that

the commercial classes in various countries contribute the largest proportion of crime; they are also, as Féré tells us, the most afflicted with nervous complaints, with the exhaustion of the nervous system, so inseperable in some degree or other, from a busy, modern existence, and so fatally linked in its graver forms, with morbid and criminal impulses. The agricultural and mechanic classes, on the other hand, whose pursuits are different, involving less anxiety and fewer temptations, prevent a smaller percentage of crime. The coincidence therefore of the unexampled growth of crime and of industrial activity is justly held to be something more than fortuitous.

It is the fashion to use the vague world "degeneracy" in connection with a condition of the nerves, supposed to be due to modern influences. When the word is employed as it is by Krafft-Ebing, Kurella and Lombroso to describe a peculiar instability of the nervous system, accompanied by definite anatomic variations from the normal type and also by peculiar characteristics of mind, it is undoubtedly indicative of a physical and moral predisposition to crime. A lesser degree of degeneracy, however, that acquired in pursuits too absorbing for the health and strength, may, and does, predispose to crime, especially to homicide, a form of crime committed for the most part by persons who have reached any of the stages of mental and moral deterioration. Nothing, indeed, is more conclusive with respect to the nature of this crime than the fact that an extremely large proportion of the persons convicted of this offence are found to be insane or mentally infirm. Thus of 441 persons convicted of murder in the prisons of England, 143 or 32 per cent. were declared unsound in mind. In short, we are assured beyond any question by these facts and many others that might be instanced, that people who suffer in any degree from maladies of the nervous system, are particularly addicted, as compared with the healthy, to murder; that industrial activity, if too absorbing and severe, may produce various gradations of degeneracy of the mind and nervous system, very often acquired, very often too, inherited, and furnish with its increasing growth one of the predisposing causes of the enormous development of murder in recent years.

There is another circumstance connected with this subject, that I am tempted to touch upon before closing this paper. It is that murder in this country is very frequently committed by persons who act under a notion that they are inflicting just and necessary vengeance. Such crimes, in which category we must place lynchings, happen for reasons of which the discussion belongs more to the sphere of law than medicine. But the distinguishing mark of these crimes for us is that they are *national*, that is to say, they are caused by the exigencies of a race, not yet in perfect harmony with its environment, that does not seem to know, in fact, the *economy*[1] of crime. I say *race*, for it is undoubted that, in the regions in which illegal executions are most frequent, a definite nationality has been formed, different in many respects from any type of the Old World.[2] In other parts of the country the differentiation of the European races in America from any European type is rapidly proceeding, if, indeed, it has not already been consummated as was long ago observed by M. de Quatrefages.. I am inclined to think that a large amount of crime is the result of the play of forces, social and physical, that are at work in this process of differentiation; and until these forces are met on the part of the inhabitants with a better comprehension of how to combat their evil influences, until it is known that the fever of business must subside, that the severities of climate must be mitigated, the excesses of political passions controlled, we may expect, what we have now in frightful amount, an increase in crime.

[1] Broca: Hist. de la Soc. d'Anthropologie de Paris, 1863, p. 37.
[2] Krafft-Ebing: Psycho-pathologie, p. 2.

MEDICAL VIENNA AND HEIDELBERG.

NOTES FROM MY SKETCHBOOK.

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Several surprises were in store for me at Vienna. As I approached the city by way of the Danube, a day's sail upon which is as fascinating and full of historic reminiscences as a trip up the Rhine, I began to wonder whether a certain "waltz king" were not the victim of achromatopsia; for the "beautiful blue Danube" is most emphatically a bilious brown in tint. Again when I discovered that the capital of Austria is not on the Danube but a long way back from it on a very muddy canal and a very much muddier creek, my confidence in the veracity of a certain old schoolmaster received a rude shock. To this insignificant creek, the Wien, does the proud city of the Hapsburgs owe its name. Once more to my utter astonishment I found that the great city of Vienna, the real Vienna, is only about a mile long and a half-mile wide, while its apparent bigness is due to the incorporation of some thirty-six or more large suburbs immediately adjoining it. From these suburbs the streets all converge, like the spokes of a wheel, toward the picturesque old cathedral of St. Stephen in the heart of Old Vienna. Unlike most other cities, the aristocratic portion, where the royalty, the nobility and the wealthy have their residence, is the most ancient. The antiquity of this part of the city is revealed in the narrowness of its streets, the height of its buildings, its well paved but undulating thoroughfares, and its numerous dark alleys and covered byways. A touch of orientalism is seen everywhere. Encircling Old Vienna and occupying the site of the ancient ramparts, is a broad and magnificent boulevard, known as the Ringstrasse and adorned with parks, fountains, monuments, statues, and some of the city's finest examples of architecture, among them the splendid University. The circle of suburbs stretches away beyond the Ringstrasse. There is a wealth of history and legend in Old Vienna; its very life teems with music and art; its people are interesting to know and study; its customs are unique. Excepting Paris, Vienna is probably the most beautiful city in Europe. Its architectural elegance equals the brightest visions of the most florid imagination. The first sight of its pomp and splendor so overwhelms the medical visitor with astonishment, enthusiasm and admiration, that it takes him several days to acquire sufficient calm and courage to look up the hospitals and gaze once more upon filthy sores and ugly tumors. But, alas, it must be! Marble palaces, Gothic cathedrals, Greek temples, art galleries and museums, royal operas, Hofburg theaters, flower gardens and entertaining music, brilliant arcades, curious statues, magnificent monuments, fretted fountains, gorgeous shops and quaint markets, all must be passed by one who

would know somewhat of medical Vienna and who has but a few days to learn it in. Medical Vienna, both educational and eleemosynary, is full of interesting history and practical suggestion. Go not then to the city of Marcus Aurelius and Maria Theresa, the carnival city of wine, woman and song, the city of the mystic meerschaum and the home of beauty and art, to study its medical life, unless you go as a student to take up a long residence there. If you go for a few days only, its wealth and magnificence will so enrapture you that your hours will have vanished ere you have had an opportunity of getting even a glimpse of the great University and the vast Imperial Hospital.

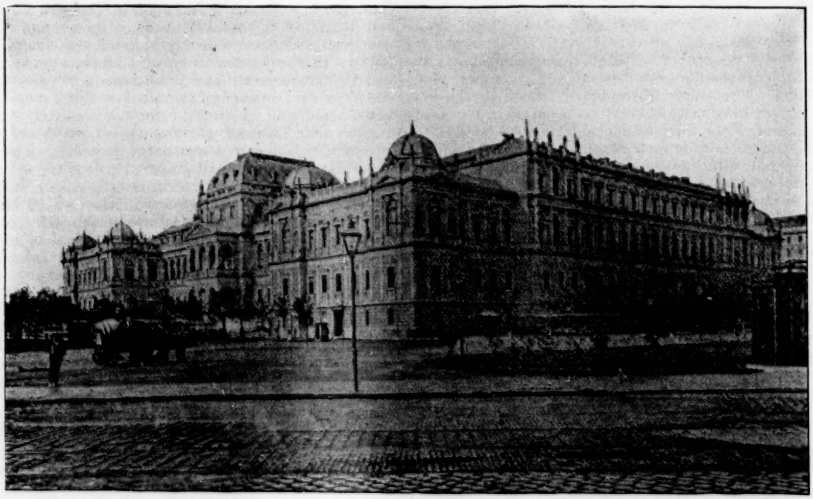
As everybody knows, Vienna leads the world at present in general medical education. The mere mention of such names as Billroth, Ludwig, Nothnagel, Chrobak, Schauta, Exner, Benedikt, Kaposi, Politzer, Obersteiner and others, is enough to confirm her preeminence. And yet it was not always thus, for she was long outshone by France and Germany. In neurology and psychic medicine Paris even to-day holds an exalted position; while in pathology and therapeutics Berlin has scarcely a rival. The reasons for the preëminence of Vienna are many. One is the cosmopolitan character, size and wealth of her population. The generous support and favor of the government in educational matters is another. Above all, however, is the unusual concentration of learning in the capital and its matchless University. In Austria university education is pretty much the same as it is in Germany. I will have somewhat more to say about it in my sketch of Berlin. Even in Germany, where learning is so intensely cultivated, the twenty-one universities drain the educational resources of the empire more than do the seven universities of Austria. In both countries the university is a government institution and one of its four or more faculties is always that of medicine.

Within sound of the famous Strauss concerts in the Volksgarten and almost under the shadow of the lace-like Votivkirche rises the superb building of the University. A stone's throw from it are the Rathhaus, as fine a specimen of gothic as one can ever see, the Parliament Building in the style of the pure Greek, the gem-like New Hof-theater, the Law Courts constructed after the most elegant renaissance manner, and many other great buildings, museums and monuments. The Franzensring is a veritable architectural paradise. The designer of the University was Ferstel, one of a brilliant coterie of artists who have added luster to the fame of the royal city. Its style is almost pure renaissance. Immense in size, massive in appearance, and compact, it is nevertheless graceful, chaste and attractive. Its sides are generally plain but its front is broken with galleries, facades and retrenchments. Its cornice is adorned with exquisite moldings, pediments and statuary, while its roof is varied with a large central dome and several smaller domes and cupolas. Its interior is quite as rich and ornate as its exterior, free use having been made of variously tinted marble. The University of Vienna is one of the oldest among the Germanic peoples, having been founded in 1237. Greatly to its advantage, it was reformed under Maria Theresa by her celebrated medical adviser Van Swieten. This famous old courtier physician seems to have been a pretty energetic fellow in his day. He was born at Leyden in 1700. He studied at the university of his native city and that of Louvain, ultimately becoming a pupil of the immortal Boerhaave. After serving for a time as professor in the University of Leyden, he was forced to resign on account of being a catholic. At once Maria Theresa invited him to Vienna. This was in 1745. He was appointed physician to the Empress, director-general of medicine in Austria, imperial librarian, professor and a baron. He wrote much upon surgery, military medicine, epidemics and other related matters. His death occurred in 1772. Such was one of the liberally educated, representative, old-time physicians who in their immense learning, untiring industry and wide capability stand as a permanent protest to the narrow, technical specialized doctor of the present day. As I stood beside the grave of this famous old doctor in the small but elegant church of the Augustins and in the midst of many magnificent monuments and mausoleums, notably the world-renowned one executed by Canova in memory of the Archduchess Maria Christina, I thought of the honors and dignities conferred upon medical men abroad and compared them with those conferred in America. I fear my head drooped a little and I confess my reflections as a member of the American profession, were anything but self-congratulatory. In every great city of Europe, streets are named, statues erected and public monuments consecrated to the memory of eminent medical men. I began wondering whether the fault lay entirely with our peculiar form of government, or we ourselves were not to blame in a very large measure. I wondered if our numerous ill-prepared colleges, our low standards of medical education, our senseless desire for cheap notoriety, our tolerance of 'isms and 'pathies, our ofttimes badly-concealed efforts to maintain a professional air with a trade-and-barter method of conduct, and especially our too frequent attacks of professional jealousy and absence of laudable *esprit de corps*, were not after all more in the way of preventing the American people honoring our profession as they should. In the midst of these reflections I strolled sadly out of the church, but took comfort in the thought that the last few years had raised our standard of medical education somewhat and promised better things for the future.

The old university used to be in the vicinity of St. Stephen's church, in a building now occupied by the Academy of Sciences founded in 1846. When it was transferred to its new location it became the center of the educational quarter of the city. The General Hospital, long used for medical teaching, was already there. A short distance beyond were the extensive gardens and superb buildings of the insane asylum for 600 patients. In a neighboring street rose the chemical laboratory, a beautiful renaissance structure designed by Ferstel; while farther along in the same street stood the Josephinum, or Academy of Medicine and Surgery. The latter was founded in 1784 by the Emperor Joseph II. for the training of military surgeons, but afterward he changed his plans. The building to-day contains a remarkable collection of wax preparations illustrating anatomy. In an adjoining edifice, formerly used for the manufacture of implements of war, are the anatomic and physiologic departments. Several military barracks are scattered about the vicinity; while in the midst of them all, occupying the center of a large open platz, rises the magnificent, gothic, highly-ornamented Votivkirche.

The study and practice of medicine in Vienna seems always to have been a matter for the considera-

tion of the state. This may be one reason why the standard of medical education there has always been relatively high. The religious orders have had more of a voice in all educational matters in Austria, otherwise the educational methods have closely simulated those of Germany. It is curious to note that some old statutes of Vienna declare that "medicine is a truly rational science, both as to its theory and its practice." Some modern lawmakers in America, I suspect, do not hold the same opinion! If the applicant for honors were already a master in arts, he was expected to have heard lectures in the medical faculty for at least two years. He would then be entitled to the baccalaureate degree, provided he had heard lectures upon Joannicius, Avicenna and some general work of practice, like that of Rasis Almansor. If he were a candidate for a licentiateship and were the possessor of a degree he was required to attend lectures on medicine for five years. If the authorities found him fit in knowledge and character, devoid of canonical impediments, and *not too effeminate of countenance*, he might receive his degree at the age of 26 but strictly not until he was 28. If princes applied for a degree and were found wanting, they were refused on the ground of the statutes. The promotion of licentiates to the doctor's degree was for many years ordered by law to take place in St. Stephen's cathedral, where the new doctor was expected to deliver an address in praise of medicine and afterward a lecture upon Avicenna, Hippocrates or Galen. In spite of the comparative ignorance of that day, how much more seriously was a medical education regarded than is too often the case now! Given the same governmental control and intelligent support that it enjoyed then, with its modern superiority in knowledge, how much more exalted and effective would be the profession of medicine to-day than it actually is!



UNIVERSITY BUILDING, VIENNA.

Practical medicine has always had a stronghold in Vienna. As early as the seventeenth century the city contained a large number of hospitals. Its progressiveness is shown in the fact that the first asylum in central Europe, for the exclusive care of the insane, was established here in 1784. To-day it possesses the largest general hospital in the world and about twenty-four other hospitals, four of which are public institutions, while the rest are more or less private concerns. With a population of about 1,100,000, its hospital beds number four and a fraction to every 1,000 inhabitants. The oldest hospital in the city was the Borough Hospital of the Holy Spirit, founded by Frederick the Combative in 1240. In 1532 this was removed to the convent of the Clarissa nuns and, like most similar institutions of the time, combined the attributes of a hospital and almshouse. It continued to be the chief important charitable organization of the city for the next 300 years. At one time it sheltered 3,000 souls. It was still an important institution in 1754, and was made the seat of a medical school in 1756. The reputation of the medical school had already long vied with that of Bologna, Paris and Padua. In 1394 St. Mark's Hospital was erected by a private individual, but it was upon two occasions destroyed by the Turks. The Emperor Joseph decided in 1780 to abolish the numerous small hospitals throughout the city and to incorporate them into one large establishment. This was a wise move on the part of the government, for at the time there were the Crusaders' Hospital built by the Knights of the Order for twelve patients, the Military Hospital previously used as a lazaretto, the Contumazhof, the Bæckerhænsel with its 300 beds for the use of convalescents from the Borough Hospital, the Imperial for the employes of the Court, the Spanish, the Trinity and the Strudel Hospitals. In the amalgamation of these various institutions, the

monarch appropriated the old workhouse which had been founded nearly a hundred years before by Leopold I., and established beneath its roof the medical school as well as the new hospital. The building had at first been used as a Hôtel des Invalides for retired soldiers and their families. Additions and alterations were made and the whole opened, in 1784, as the General Hospital, or *Allgemeines Krankenhaus*, which has since become world-renowned. For a long time it contained departments for maternity cases, lunatics, foundlings and the sick in general. In 1834 extensive additions were made to the hospital and again in 1862. The maternity cases, the lunatics and the foundlings were separated and placed under a different management in 1860. In 1887 the hospital contained 2,000 beds and treated some 25,796 cases. Surgery has always been an important feature of its work.

A few details in regard to the management of this great and model hospital may be of interest. The government controls it and the same management includes the care of the Royal Rudolph with its 860 beds and the Royal Wieden with its 597 beds. The General Hospital has a director, who draws a salary of 3,800 florins (the florin being equivalent to about 49 cents of our money), and a superintendent. The medical staff is paid by the directors out of the hospital funds and includes five senior physicians and five senior surgeons. Each has three assistants. There are 16 dressers. The senior members of the staff get a salary of 1,800 florins per annum without residence. The nursing staff numbers 226, all of them being lay women except 12 male attendants. The nurses average about 1 to every 10 patients. Their compensation is from 12 to 16 florins per month, with board, washing and uniform. Members of certain religious sisterhoods attend to the nursing in the Rudolph and Wieden. The General Hospital is of course a public charity but it receives three classes of paying patients, namely, those who desire the best accommodations at 5 florins per day, those who can give 2 florins, 50 kreutzers per day and finally those who are satisfied with the accommodations afforded for 1 florin, 7 kreutzers per day. Incurable and obstetric cases, as well as children under 4 years of age, are not admitted. The expenses of the institution are met by a Royal Hospitals fund and a reserve fund, both of which are made up from various sources such as interest upon the original capital invested, legal tolls and duties, payments from patients, subscriptions and voluntary donations.

The Allgemeines Krankenhaus covers an area of nearly 25 acres and consists really of a series or conglomeration of hospitals. There is nothing to be said of it architecturally. It is an old-time structure and when I first visited it, toward the latter part of a clear afternoon, I could scarcely believe that I had actually arrived in front of the world-renowned institution. Plain, low and unornamental, it produced in me a feeling of intense disappointment. A photograph of it would scarcely have been worth the trouble of taking. It is an immense rectangular structure surrounding a spacious courtyard and having various irregular, inharmonious wings attached. As I afterward strolled through many of its halls and wards, having been favored with letters of introduction to several members of its staff, I was impressed with the cleanliness and precision with which everything was done in spite of the many inconveniences and ancient construction. Without doubt, it is, except architecturally, a model hospital. Of course were a new building to be erected many improvements would be required for the sake of light, air, ventilation and general cheerfulness. As is the case with many other hospitals in Europe, antiquity must be pleaded as an excuse for shortcomings. Small windows, low corridors, curious old-fashioned doors, rambling halls, musty dark corners, irregular floors, cracked walls and narrow apartments are not entirely uninteresting, for they speak of the past with its suggestiveness of quaint story and feudal history. But in a modern hospital they are not altogether compatible with the modern ideas of surgical requirements and hygienic perfection. The wonder is that in these old hospitals such splendid results are so often attained. It bespeaks unusual attention to details, a systematic exactness and an exceptional skill on the part of the attendants. And after all that may be one of the causes of the supremacy of some of the foreign schools of medicine. The continuous bath for the treatment of skin diseases is a feature in the clinical work of the General Hospital. Besides this hospital mention should be made of the Inquisiten with its 163 beds, the new and attractive Favoriten with its 560 beds and the St. Anne's. Vienna is supplied also with a most excellent Smallpox and Epidemic Hospital, the latter having been erected at the time of the cholera outbreak in 1873 and the first to be constructed in the pavilion style, at a cost of some £39,000. It contains about 300 beds.

HEIDELBERG.

One marvels how a town of only 22,000 inhabitants, and a singularly salubrious town at that, can possibly furnish a sufficient variety of diseases for the maintenance of a school in practical medicine. And yet Heidelberg, known among tourists chiefly for its fine old German castle, its great tun and its dueling students, is one of the most celebrated seats of medical education in all the German empire. It contains a hospital of nearly 400 beds and the medical faculty of its famous university ably maintains the ancient renown of the school. Such distinguished names as Tiedemann, Gegenbaur, Kuhne, Czerny, Erb and Vierordt would add luster to the name of any university. Many a traveler has departed from Heidelberg, after viewing its principal sights and hunting high and low in vain for the university of which he had heard so much, with possibly a feeling of doubt and disappointment as to the veracity of Dame Rumor. To know scholastic Heidelberg one must reside a short time there. The town itself consists chiefly of a single long street, lined on both sides with many an interesting old building, quaint shop, open plaza and curious church, all crowded together as in a vise between the swift flowing Neckar on one side and the wooded Geisberg, with the famous Schloss halfway up its declivity, on the other. Minor streets and byways of course branch off from the main thoroughfare and here and there revive memories of Goethe, Schiller, Martin Luther, Jerome of Prague, Tilly, Gustavus Adolphus and other great names in history, science and romance. Not only is the situation of the town one of the most picturesque in Europe, but its history is one of the most exciting. Scarcely less fascinating, however, is the story of the university, which, next to the universities of Prague and Vienna, is the oldest in Germany.

One day as I was sauntering about the town, having

in despair almost relinquished my efforts toward finding the university, I was made aware of the presence of an unusual number of student-like fellows hurrying hither and thither in the Ludwigsplatz. I imagined I must at last have arrived in the neighborhood of the school. I looked sharply about me and began getting my letters of introduction ready, but I saw no magnificent edifice anywhere, and so concluded I had again lost the trail. As I was passing through a narrow street, hoping to encounter some one who would revive my hopes by giving me the desired information, I happened to pass a small open doorway in a long, low, insignificant building that did not seem at least to be a private residence. I entered, and what was my astonishment to find, after reading some inscriptions in the vestibule, that at last I was within the walls of the great University of Heidelberg. It came home to me then and there with tremendous force, that buildings do not make universities. Could it be possible, I mentally exclaimed, that the grand old school of Heidelberg occupied no more pretentious structure than this! Truly was it said that the university building is very much like a huge model lodging house in a bad state of repair, being merely a large, plain stucco structure at one side of a bare open platz, appearing as desolate as Gray's Inn Square upon a Sunday. In size and beauty (if, indeed, it may be said to have any) the university is quite eclipsed by its neighbor across the square, the museum. There are no grand open doorways, no Corinthian columns, no majestic peristyle, no towering domes or cupolas, nothing but four flat walls. The anatomic and chemic departments are in another part of the city, and housed in fairly artistic buildings in comparison with the university itself. I would that space allowed me to do more than simply outline the history of this fine old seat of learning, one of whose most important departments is that of medicine, for as I strolled about it and learned more of its life, I grew fonder of it. It was founded in 1386 by Rupert I., purely as an ecclesiastic institution. The Bishop of Worms was its first chancellor, and its faculty consisted entirely of priests and members of the monastic order. Hence it stuck like a leech to the old scholastic doctrines during the troublous times of the Reformation, and always opposed itself to the new learning which later on had its head and source up in the castle. Only in the last century has this favored old school awakened to the progress of the world, and in that short time made itself a reputation for brilliant scientific discoveries. When we recall its stagnant conservatism, what a wealth of sarcasm there is in Pope Urban's bull of 1385, wherein he states that the "town of Heidelberg, which in view of its healthy situation and air and its fertile surroundings, is admirably adapted to form a universal fountain of the sciences." The first statutes of the university were drawn up by Marsilius von Inghen, a former instructor in the University of Paris. The students were required to attend the lectures daily on pain of losing their rights of membership and final certificates. The highest salary paid to any professor was given to Marsilius, and consisted of about £20. The tutors usually received £5 or 50 florins, a pretty handsome sum, I presume, for that day, but scarcely enough for shoe polish in this! Great privileges had this old university. Note some of them for curiosity's sake. All attendants, as well as all who were brought in contact in any way with this "beloved daughter" of Rupert I., such as booksellers, bookbinders and servants of the tutors, were amenable to the jurisdiction of the university only and were exempt from all taxation.

By a commission, the board of the students for one week was to be about three farthings. Three farthings, think of it! The good folk of the village who cared to board any of the students were not required to pay *octroi* or city toll duties. And again, if any of those old Heidelbergers laid violent hands for any purpose whatever upon those precious students, they were obliged to pay a "fine of 60 florins and damages." Every year the magistrates were compelled to take oath that they would not infringe upon the rights of the fondling of Rupert. A pretty mess all these favors soon concocted and as a result *students' wars* and other "great uproars arose" until old Rupert himself had to hasten down the hill and force the town to behave itself. In all sorts of ways the succeeding electors petted and nurtured this spoilt child of theirs and how little did it give in return! Nothing but a lot of theologic truck and a fierce opposition to the advancement of knowledge. At last the electors became tired of all this and one of them, Otho Henry, he who built the charming Heinrichsbau of the castle, "resolved to make the university flourish again even though it should cost him his last farthing." This Henry had vim in him and no scholastic nonsense was able to turn him from his purpose of awakening once more the spirit of intellectual progress. Inviting Melancthon, the companion of Luther, to join him, a quartette was formed, including Henry himself, Melancthon, the councillors Ehem and Propus, to whom was also added the classicist, Micyll, to undertake the remodeling of the school. Success attended their efforts and the ancient scholastic methods were abolished. The library was enlarged and the whole institution placed on a firmer basis. Many famous scholars and teachers occupied its chairs. When Heidelberg was destroyed in 1693 during the war, the university was also burnt. The faculty fled for their lives, but continued their lectures at Frankfort and Weinheim. In 1700 the university was reëstablished but during the eighteenth century it was again under the influence of religious conservatism. During the Napoleonic upheavals it received a terrible blow, but in 1803 the Elector of Baden revived it again and placed it on a new foundation, since which time its reputation has steadily increased until now it is one of the noted schools of Europe. The medical department has awakened to new life, and such men as Czerny and Erb and Kuhne have brought it fame. The students of Heidelberg are always proud of their school. To-day they retain many of their privileges, and the easy going burghers are judiciously gracious to them. Dueling is one of the drawbacks, but the abolition of that is under consideration. The merry celebrations, the jovial concourses with rollicking songs and huge tankards of beer, make college life in Heidelberg an episode in one's existence never to be forgotten. Whatever trials he may have passed through, however far he may have wandered, whether high or low be his station in life the old alumnus of Heidelberg recalls with indescribable delight the democratic days of his youth when shoulder to shoulder with emperors' sons, princes and future savants he drank his beer, roved over the neighboring mountains and imbibed the pleasures of knowledge in his dear old alma mater beside the swift-flowing Neckar.

As many American physicians visit Europe, and as medicine is the same there as it is on this side of the water, I thought the limited space at my disposal would probably be more interestingly occupied with these brief notes upon Vienna and Heidelberg than with a description of familiar clinics and technical details.

4544 Lake Avenue.

SELECTIONS.

Obstruction of the Bile Duct.—At the annual meeting of the New York State Medical Association, Oct. 14, 1896, Dr. Henry O. Marcy of Boston contributed an interesting paper upon the "Surgical Relief of Obstruction of the Common Duct by Biliary Calculi." He gave a review of his special studies upon biliary obstruction, which commenced in 1876, with detailed reports of cases, occuring in 1880 and 1881, where he urgently advised operative procedures for the relief of biliary obstruction. Postmortem examination showed that the causes of the obstruction was a biliary calculus lodged in the common duct. Operative interference was refused since there was no record of surgical procedures having ever been attempted for this purpose, and the agreement of the consultants that it was probable that the obstruction was in the common duct. Autopsy showed that operative interference would have been not only possible, but that the conditions were favorable for surgical interference. Dr. Marcy performed his first operation in July, 1887, and although unsuccessful in the removal of the gallstone, because of intestinal adhesions, the calculus was dislodged and the patient recovered, followed by a short period of relief. Later the autopsy demonstrated that the calculus was in the common duct with a limited range of movement. Afterward Dr. Marcy criticized his operation, believing that the duct might have been opened and the calculus removed, followed by immediate suture of the wound in the duct, with a reasonable degree of safety. Dr. Marcy gives a careful detailed history of his first case of successful operation for the removal of a calculus from the common duct which occurred in his private hospital Oct. 26, 1889. Here the calculus was imbedded in the common duct so firmly that the backward pressure of the bile through the cystic duct had caused the gall bladder to be so enormously dilated that its contents measured ten ounces. Other methods of removal having failed, the gall bladder was divided with scissors through its cystic portion, until the calculus was reached and removed. This was nearly globular, about the size of a large filbert, which weighed fifty-nine grains when dry. The entire wound in the viscus measured four inches. It was immediately closed with a fine, continuous tendon suture in three layers, the first including the mucous membrane, the second the entire wall, while the third was taken from side to side as a parallel suture which, when drawn upon, evenly intrafolded the peritoneum over the wound, itself completely buried from sight. The abdominal wall was also closed in layers with tendon sutures, without drainage. The patient made an easy, uninterrupted recovery and continues well at the time of writing. Dr. Marcy's first publication upon this subject was read at the meeting of the AMERICAN MEDICAL ASSOCIATION, held at Nashville in May, 1890. He reports his subsequent experiences as more than satisfactory and gives his fullest approval to the advisability of surgical relief in biliary obstruction caused by a calculus in the common duct. Dr. Marcy's paper is of the greater importance, since he was the first to attempt the operation, and the first to operate successfully for the removal of a biliary calculus in the common duct. Courvoisier, to whom the credit of the first operation has been given by one writer, performed his first operation Jan. 22, 1890.

Malignant Tumors Treated with Toxins of Erysipelas and Bacillus Prodigiosus; Series of 160 Cases.—In the *Bulletin of the Johns Hopkins Hospital*, August, appears a discussion of Dr. W. B. Coley's toxin treatment of malignant growths. Dr. Coley showed that his experience had extended over a period of more than four years, that the tumors sent to him for treatment were for the most part such as had been pronounced inoperable by leading surgeons, and that the diagnosis of malignancy had been determined, in practically all the cases, by a competent microscopic examination.

An analysis of the cases treated showed that 48 were round-celled sarcoma, 13 spindle-celled, 7 melanotic, 2 chondro-sarcoma, 3 mixed celled, 14 sarcoma, special type not known. Total number of cases of sarcoma 93, carcinoma and epithelioma 62 cases, sarcoma or carcinoma 10, tubercular 2, fibro-angioma 1, mycosis fungoides 1, goitre 2, keloid 1. Of the cases of sarcoma, nearly one-half showed more or less improvement; the variety that showed the greatest improvement was the spindle-celled, that which showed the least, the melanotic. Next in order of benefit was the mixed celled—round and spindle; then round celled, while osteo-sarcoma closely approached the melanotic in showing but little change. In a series of nine cases of melanotic sarcoma, no improvement was noticed in six, very slight in three. Most of the cases of osteo-sarcoma failed to respond to the treatment, many showed slight improvement and one case, a very large osteo-chondro-sarcoma of the ilium, apparently disappeared and the patient remained well for nearly a year, when a recurrence occurred. One case of round-celled sarcoma of the neck of very rapid growth showed very marked decrease during the first week's treatment, after which time it continued to grow in spite of large doses of toxins. The writer stated that he did not expect the profession at large to accept without question and criticism such remarkable results as he had reported, and for that reason he had related with some detail the successful cases in the hands of other surgeons who had employed this method. He was of opinion that a series of upward of twenty successful cases of inoperable sarcoma (four of which had remained well upward of two and a half years), the diagnoses of which had been established beyond question according to accepted methods of diagnosis, ought to be sufficient to demonstrate the real and positive advance that had been made in a field which, up to this time, had been regarded as absolutely hopeless. He did not doubt that there were those who would still remain skeptical about the value of the toxins in spite of the evidence presented. Such persons must either fail to see any logical connection between the accidental erysipelas and the toxins, or they must go even farther and deny that there are any authentic cases of malignant tumors that were cured by accidental erysipelas. The only explanation they can have to offer for the results which can not be questioned is, that in all the successful cases there must have been an error of diagnosis.

Remarks by Dr. W. H. Welch: "I have been much impressed by this personal statement from Dr. Coley, and I see no way of gainsaying the evidence which he has brought forward, that there is something specifically and genuinely curative in his method of treatment. A single undoubted cure of a demonstrated cancer or sarcoma by this treatment would be enough to establish the fact that the treatment exerts some specific curative effect, for the spontaneous disappearance of undoubted malignant growths of this character is almost unknown. Dr. Coley has, however, presented to us positive proof of the cure, not of one only, but of several cases of malignant tumor by his method. Although I suppose in any given case the chances of cure by this method are at present not great, still the demonstration that cure is possible gives every encouragement for perseverance in this line of investigation and work, and for efforts to perfect the method of treatment. It is interesting to learn that the most strikingly beneficial results have been obtained in the treatment of spindle-celled sarcomata. There are certain kinds of sarcomata which some pathologists are inclined to rank rather among the infectious tumors than among the genuine tumors, in the sense in

which these terms are used by Cohnheim; but it is rather certain sarcomata of the lymphoid type than the fusiform-celled sarcomata which are thus believed to be possibly outside of the class of genuine tumors, according to Cohnheim's classification. As Dr. Coley suggests that the variations in his results may depend in part upon variations in the virulence of his cultures, and as it is well known that streptococci vary notably in virulence, I would like to ask if he has as yet utilized the methods of Marmorek in order to obtain cultures of uniformly high degrees of virulence. Dr. Livingood in my laboratory has confirmed the results of Marmorek and succeeded repeatedly by his method in transforming streptococci of low virulence into those of very exalted virulence. It seems to me that it would be practicable and most interesting, and possibly demonstrative of the specific effects of the treatment, if Dr. Coley, in carrying out his researches, would occasionally cut out small bits of tissue from the tumor and by their examination endeavor to determine the details of the process of cure."

In closing the discussion, Dr. Coley stated further:

"About removing specimens during the course of the treatment, as suggested by Dr. Welch, I will say that I have done that in a considerable number of cases. In many of these cases a marked fatty degeneration and necrosis of the malignant cells were clearly visible under the microscope. I shall try to show these changes in micro-photographs of the sections. In regard to intra-orbital sarcomata, I have not had an opportunity of treating such cases before removal of the eye. I have had four or five cases of recurrent tumors in the orbit after the eye had been enucleated. The effects were very slight, if any. They were all melanotic or round-celled sarcomata. As to the safety of the treatment, I think that if the cases are selected with some judgment the injections can be used with almost perfect safety. I have had three cases in which I am sure death was hastened by the use of toxins. In one case I ought not to have used the treatment. There was an enormous sarcoma of the scapula and chest wall. The patient was so much emaciated that he could not have lived more than a couple of weeks, but with two very minute doses of the weaker solution of the toxins he lived only three days."

PRACTICAL NOTES.

Rupture of the Liver.—Vanverts reports two cases of rupture of the liver, one fatal from hemorrhage in an hour and a half and the other after twenty-four hours. He considers that possibly the latter might have been saved by a prompt laparotomy. In one case the left lobe was almost entirely detached.—*Presse Méd.*, October 7.

Gersuny's Sign for Differentiating Stercoral Tumors.—Gersuny states that if it is difficult to distinguish between a tumor and a hardened mass of fecal matters, certainty can be obtained by compressing the protuberance of the tumor with the ends of the fingers, gradually increasing the pressure until it is very strong, and then gradually diminishing it without removing the fingers. As the mucosa pressed against the stercoral mass sticks to it and is then released by the removal of the fingers it produces a peculiar sensation easy to distinguish, and use as a means of differentiating such a mass from a real tumor.—*Semaine Méd.*, October 7.

Fractures of the Trachea and Larynx.—The Cauvin case recently decided in France calls attention to the fact that the trachea and larynx are very easily fractured, especially in the old; a slight accident or moderate violence is sufficient. A woman of 82 was strangled, and the three first rings of her trachea fractured. A girl of 15 was the other inmate of the house, but she denounced the heir as the murderer, and as it seemed impossible that a young girl could have caused the lesion unaided, the heir was condemned and an appeal to a higher court only confirmed the decision. While he was awaiting removal to the penal colonies, the girl confessed and proved that she had unaided committed the murder.

Creosote Pills for Phthisis.—Romeyer and Testevin recommend the formula below as borne well by the stomach and free from the disagreeable odor of creosote: Creoso-magnesol, 10 centigrams, with honey sufficient to make 100 pills. Six or eight to be taken during the day. The creoso-magnesol contains 80 per cent. of creosote, and is made by dissolving 20 grams of potassa in 10 grams of distilled water in a porcelain mortar. Eight hundred grams of (beech) creosote are then added and worked into an emulsion, and finally 170 grams of freshly calcined magnesia. The mixture hardens in a few hours, thirty-six at most, into the proper consistency for pills; if too hard it can be pulverized in the mortar and mixed into a paste with honey.—*Semaine Méd.*, October 7.

Addison's Disease Cured by Extirpation of one Suprarenal Capsule.—Hadra removed a tumor "the size of a small apple" from a woman of 55, situated directly on the spine, on a level with the stomach. It was causing great pain, dyspnea, night sweats, emaciation and extreme muscular weakness, with edema of the feet. Examination after removal disclosed that it was nothing else than one of the suprarenal capsules affected with tuberculosis, and the complications a case of Addison's disease without the pigmentation, which is not always present.—*Semaine Méd.*, October 7.

Cure of Local Cutaneous Tuberculosis by Bier's Congesting Method.—The remarkable fact that persons with mitral insufficiency are so rarely affected with pulmonary tuberculosis, suggested the idea to Bier that tuberculosis of the joints might be benefited by producing artificially a similar sluggishness in the parts affected. The principle is that the bactericidal effect of the blood is more pronounced the longer it is in contact with the bacteria and the more abundant the supply where they are located. Jacoby now proposes to apply it to the early stages of pulmonary tuberculosis by appropriate positions, partial hot baths and massage of the thorax. Woltersdorf describes his experience with it in the *Deutsch. med. Woch.* of October 8. It resulted in absolute cure in his case. He cut his finger during the necropsy of a consumptive in 1892, and local cutaneous tuberculosis developed at the spot, which resisted the usual treatment. He kept postponing the radical measures his friends advised until the leisure time that never came, but two years afterward he became engaged, and according to the German customs he began to wear a betrothal ring. This was worn on the affected finger and caused much pain at first and congestion. He concluded it was a fine opportunity to test Bier's method and was able to announce its success in six months, as the tuberculosis gradually disappeared, until in a year there were no traces of the lesion. He concludes by suggesting its application to lupus faciei by ligating the vena facialis.

Papillo-retinitis in Chlorosis.—In a recent number of the *Deutsche Med. Wochenschrift* appears a paper by Diabella on this subject. It describes the case of a female patient aged 21 years, who began to menstruate in her fourteenth year. Her periods came on irregularly, and she developed a certain degree of chlorosis which did not quite disappear in spite of treatment by iron. In the autumn of 1894 she began to suffer from left-sided headaches and was generally out of health, and in the spring of 1895 she developed great weakness again. Menstruation, which had been interrupted, was reëstablished and immediately after this there was impairment of vision and later diplopia. On admission to hospital in April there was marked anemia with reduction in corpuscles and hemoglobin, papillo-retinitis on both sides and paralysis of the left external rectus. There was a loud hemic murmur. Under treatment with iron and rest in bed there was rapid improvement in the general condition, and by the end of May her color was natural, the murmur could no longer be heard and there was a marked improvement in the state of the blood as regards both corpuscles and hemoglobin. There was also a distinct subsidence of the condition of the optic disc and fundi, and when the patient presented herself again in September these appeared absolutely normal. The author considers that the physical strain and the reëstablishment of menstruation, which preceded the onset of the ocular symptoms in this case, were the means of evoking them in a patient predisposed to disturbance by the long-standing chlorosis, in a manner analogous to that in which similar changes are said to take place after severe loss of blood.—London *Lancet*, September 19.

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SATURDAY, NOVEMBER 14, 1896.

THE POISONING OF A PEOPLE.

In our zeal to prevent the infection of the individual and to protect against epidemic outbreaks in the community we are blind to a pathologic process going on around us of the most stupendous proportion and with the absolute certainty of frightful consequences—the poisoning of the entire race—the slow, sure infiltration of a subtle venom, as discernible by symptoms as the solitary case of a toxic dose of opium or arsenic, or the local scourge of a visitation of cholera or yellow-fever.

When the nation was young, the tiny stream of foreign immigration, like a little clouded rivulet adding its scarcely appreciable substance to the broad extent of crystal waters, was swallowed and however muddy its source its particles were soon lost in the multitude of the clean and strong by which it was overwhelmed. To-day a thousand sewers are pouring turbulent streams of fetid, pestiferous slime into the once clear sea and already the ceaseless, discolored and unclean inflowing is showing its baneful presence. Shall we patiently abide the complete surcharge and then awake to the fact that any remedy is too late?

In an article on "Immigration and Crime," in the *Popular Science Monthly* for September of this year, SYDNEY G. FISHER declares that: "The criminal influence of the alien with its steady increase can be traced back in our history for the last sixty years." Our system of foreign immigration, he says, first began to reach serious proportions in 1820, and its effect on manners and morals soon attracted attention. The native American party arose some time after 1840. Revelations of pauperism, crime and corruption became more apparent from 1830 to 1850. In those days, "when the foreign population was only one-eighth of the whole, it furnished 2,000 more paupers and 1,000 more criminals than the other seven-eighths. Every 32 foreigners produced a pauper and every 154 a criminal, but it required 317 natives to furnish one pauper and 1,619 a criminal." The following table from the census of 1880, based on a ratio to 1,000,000 of population, exhibits the proportion of foreign to native paupers and prisoners at that and the preceding three decades:

		1850	1860	1870	1880
Paupers	Native	1,765	1,849	1,635	994
	Foreign	5,986	7,843	4,095	3,438
Prisoners	Native	207	371	733	1,054
	Foreign	1,074	2,161	1,568	1,917

According to the census of 1855 of the State of Massachusetts, which is exceptionally exact in its vital statistics, the foreign born in that State were 21.1 per centum of the whole population, and yet they furnish 44.03 per centum of all the paupers, 40.06 per centum of all the prisoners and 30.87 per centum of all the convicts.

The national census of 1890 shows that the native white element of the population is 54.87 per centum of the whole, but it produces only 43.19 per centum of white prisoners; and the foreign white element is only 32.93 per centum of the whole, and yet provides 56.81 per centum of the white prisoners. It also shows that no small proportion of the murders committed by the natives was due to the example and presence of foreigners.

"The foreign-born population in this country contributes, directly or indirectly, in the persons of the foreign born or their immediate descendants very nearly three-fifths of all paupers supported in almshouses; although less than half the whole population it furnishes more than half the paupers." (Census Bulletin No. 90.)

The fathers of the Republic, Mr. FISHER further shows, were entirely opposed to promiscuous wholesale immigration. The importation of paupers, vagrants and criminals, together with hundreds of thousands of men and women capable only of cheap manual labor was foreign to their thoughts, or if they contemplated it at all, it was only to revolt against it. WASHINGTON wrote: "My opinion with respect to immigration is that except of useful mechanics and some particular descriptions of men or professions, there is no need of encouragement; while the policy or advantage of its taking place in a body may be much questioned." Again: "It is not the policy of this country to employ aliens, where it can well be avoided, either in the civil or military walks of life." And JEFFERSON: "They will bring with them the principles of the governments they leave, imbibed in their

early youth, or if they are able to throw them off, it will be in exchange for an unbounded licentiousness, passing as is usual from one extreme to another." MADISON, who FISHER says, favored immigration more than any others and introduced the first bill to encourage it, always insisted that he intended to bring over only the *worthy part of mankind*, and said in a letter written in 1813: "It is not the provision of our laws or the practice of the government to give any encouragement to immigrants, unless it be in cases where they may bring with them some special addition to our stock of arts or articles of culture."

Let us note a few symptoms of the morbid inoculation that has been permitted, notwithstanding these patriot words of warning:

The professional beggar is becoming as familiar an object in our streets as in his Neapolitan or other European home. Deformed children, decrepit crones, and ragged graybeards, crouching on the sidewalks, assail the passer with well-trained wailing voices. Want and privation we have always had with us, but the whine of the mendicant trade has only lately been heard and the heart-rending, up-turned face of apparent agony on some hideous body never before seen. If tolerated a little longer we may soon expect the revolting spectacles of European cities to be duplicated, as well as the establishments in which infants are mutilated and prepared for street or freak museum display. The staple attractions of the illustrated weeklies are "Weary Willies" and "Meandering Mikes," ragged, filthy and loathsome, whose preachings of idleness and thievery are intended to be humorous, but ought to be abhorent. The word "tramp" has acquired as recognized a significance as some of the novelties of the medical dictionary.

Gallantry toward women has always been the characteristic of the native American, but it is now a daily exhibition on street cars of churlish young men of unmistakable foreign type, with vulgarity stamped all over them, who sit while feeble women old enough to be their mothers cling to over-hanging straps and are swung violently by the swaying of the cars. The public conveyances are crowded with coarse, unclean alien laborers, whose first lesson in liberty has been a license to be brutish and insolent. The manly suavity of the American mechanic, however uncultivated, marking him as an innate gentleman, is fast disappearing before vulgarity and indecency. Ignorance, superstition and brutality breed vice, and the readers of the newspapers can not fail to note the prevalence of revolting crimes whose perpetrators have names unpronounceable by Anglo-Saxon tongues.

Within a month the great city dailies have published accounts of youthful Fagins, whose rude pictures evidence their race, who were organized to teach still younger lads to steal; of Italian girls, who first sacrifice with little compunction their pretense of virtue and then stiletto the recreants who had undone them easily enough, or the rivals who had supplanted them; of Russian rabbis who marry and unmarry their ignorant compatriots in defiance of the law; and of Hungarian brutes who snarl and fight and tear and rend the woman, made wife as the beasts mate, and ruled by blows and kicks and deadly weapons. The bright, inquisitive children of reputable households pick up the morning papers as their fathers discard them and read the revolting reports of theft, riot, pillage, murder, rape, incest, adultery and bigamy committed by men and women with strange names. To specify instances in detail would exceed our space. M. M., longshoreman, beat his 7-year-old daughter and dragged her by her hair fifty feet and when arrested claimed she was his child with whom he could do what he pleased; E. G., married in Hungary, was divorced by a rabbi, who, when she was arraigned for bigamy, remarried her to her first husband—both woman and rabbi escaping punishment; F. L., an Italian blacksmith working in the New York navy-yard, tells his wife to dress in her best to go to Brooklyn after breakfast, "going to Brooklyn" meaning among the low caste (American citizens!) to be taken in a hearse to Calvary Cemetery, for which he prepared by killing her; L. N., a boy, kills the younger pupil of his same race for withholding the profits of a petty theft; G. F., appropriates a 14-year-old Sicilian girl, whom he sold to another brute, who rented her, at so much an hour, to his friends.

The Immigration Investigation Commission appointed by Congress June, 13, 1894, of which Hon. HERMAN STUMP of Maryland is chairman, is seeking to exclude paupers. How unsuccessfully the revelations of the New York Board of Health show: "Squalid quarters, where none of the filthy families speak English"—"a notorious Italian district, famous for midnight rows in which the stiletto always plays a prominent part"—"a single tenement running the entire block, with people enough to populate a New England village"—"one roof covering a hundred families, who screech 'no sika baba' in reply to the inspector's inquiry, looking upon him as an emissary of the evil one." In one day the board of health condemned fifty-two rookeries, in which "the filthy conditions shown to exist seemed to preclude the possibility of existence." In two houses in Cherry Street 472 persons were herded in quarters unspeakably wretched. There were 702 human beings found in "dingy rear tenements, never penetrated by the light of the sun nor by a puff of fresh air." In a rear tenement on Mulberry Street, for the last five years, there has been a death rate of 75.05 per 1,000, and in other places it has risen at times to 135.5 per 1,000, the average of the city having been 22 per 1,000. As Dr. ROGER S. TRACY, register of statistics of the board of health declares: "Where these high death rates prevail

are centers from which contagion can not fail to spread."

Comment on these appalling facts is unnecessary. Intelligent Americans, both native and naturalized, must know that these loathsome dives are dangerous to the entire community. A gentleman riding home on a street car from the Cotton Exchange sacrificed a new suit and scoured himself raw to get rid of the lice a dirty Pole, against whom he had been wedged, literally showered upon him. What sacrifice of clothes or scouring of skin could have rid him of the syphilis, tuberculosis or skin disease he might just as readily have contracted? It is claimed that the heretofore dominant physical traits of the Anglo-Saxon are disappearing under the admixture of alien races. Whether or not this be so, there is danger that both the mental and bodily characteristics of the masses will be affected by the overwhelming influence of excessive unassimilable importations.

PARASITE AND HOST.

Can impudence, stupidity and selfishness go farther than in the following "case"? Not long ago a commercial firm enjoying the undisturbed honor of being a parasite upon the medical profession, requested medical men to give without any sort of compensation, their contributions of medical literary articles to the journals published by this lay firm. Sometimes it even went so far as to make the contributor pay for reproducing the illustrations to the article. The very agreeable contributor gave the result of his scientific work to the non-professional publisher in order that the whole profession might learn anything that could aid it in its struggle with disease. The single desire of the physician in contributing to medical journals is to secure the greatest possible professional publicity for his article. What then must be the amused and disgusted contempt of the medical man when he learns that the proprietors of the journal to whom he has given (and even paid for publishing) his article, turn upon him and by virtue of the privilege accorded claim sole proprietary rights, refusing other journals the right to quote from the article, to reproduce illustrations, and refusing the author and giver any power over and any further dissemination of his scientific results by printing! Can contemptibleness be more contemptible?

The excuse offered by this old parasite, to his host, is that he "does not like the business methods" of another and newer parasite. The deliciousness of this excuse is heightened by the fact that the new parasite treats the medical contributor with remarkable liberality and courtesy, and thus threatens the old monopolist, famous for avarice and discourtesy, with some business dangers. The old parasite, which so unmercifully has bled his host in the past, can not think of allowing a more gentlemanly competitor.

But has the medical profession nothing to say about a matter so intimately touching its own rights and duties? Is it not about time that the host awakened to a sense of shame, and that he should revolt against the monopolist parasite which has sucked his juices and strength so long and so uninterruptedly? There were 33,000 copies of the first edition of Quain's Dictionary of Medicine sold, and yet, it is said, the authors and contributors never got a penny of the wealth this book brought the lay publisher. All through the history of American medicine, physicians have supinely, humbly, tremblingly begged the lordly lay publisher to be allowed to present him with their literary labors, even paying for the privilege (at least for the illustrations), and while the publisher grew rich the poor author never got a cent, or at best only a nickel flung him in pity. And the publisher went on gathering his millions!

On top of such indignity now come some of these old monopolists and tell the author of articles presented him that he, the author and the medical profession must not dare to abstract, quote from and reproduce his own article in other periodicals or publications. An instrument or method of operation has been devised, let us say, by a physician, of great value in the saving of human life; the deviser describes and illustrates the same in a lay periodical, giving the periodical the article and paying perhaps for the illustration. This periodical at the highest estimate can not be seen by one-twentieth or one-fortieth of the profession. The author and deviser of course wishes the entire profession to know of his discovery, but the lay publisher, who has been allowed to publish the article first, says: "Oh, no! This is my property! My competitor, whose business methods I do not like, must not reproduce this article or illustration for you; you have no rights in it; I must make all the money I can out of it. People must buy my periodical if they want to know about your professional progress. Especially must I keep down more liberal-minded rivals!"

Now, with the rivalries and jealousies and business methods of lay publishers, so far as relates to themselves, we as medical men have no care or concern, but when an avaricious publisher seeks in the interest of a narrow commercialism and jealousy to limit the circulation of medical literature, certainly the medical profession must have a word to say. With books, for the material of which a price has been paid the author, the matter is different, but as regards the weekly journals which pay authors nothing for contributions (not even reprints) we wish to protest that the parasite must not dictate to the host. The literature thus given belongs to the author and the medical profession and any such impudence as refusing to permit the use of such literature is a silly impertinence that must be sharply cracked over the knuckles. Whenever such greed makes itself manifest medical men

generally should know of it, and if they prefer to thus limit the circulation of their studies it will be indeed strange.

It is such stupid selfishness as this, that, if persisted in and by any large proportion of lay publishers, must and should finally bring about the very desirable encouragement of journals and publishing houses by members of the profession themselves, and the starving out of the lay publishing houses and journals that have so long, so cunningly and so successfully fattened upon the generosity and indifference of medical men. The present is a time when a policy of greater liberality and a better justice on the part of publishers to authors is imperatively demanded. The contributions to medical journals owned by laymen must henceforth be paid for, or else they are the property of the author and for the use of the medical profession. The author who thoughtlessly limits the dissemination of medical truth by unconditionally giving it utterly without compensation to a publishing firm which shows by every selfish act and brutal word that its policy is to use that knowledge solely for its pecuniary advantage, to crush out rivals and to sell its journals—such a medical man is false to the Hippocratic oath and to every principle of professional ethics, as well as blind to his own self-interest.

Indeed, it is high time that the profession should take up the attitude of greater sympathy for journals entirely controlled by members of the profession. Its motto should be: "Literature of the profession, for the profession and (published) by the profession," and all contributions should be kept from journals devoted to a narrow financial selfishness, rather than to the progress of medical science. It is only in journals published as well as edited by professional men that there can be the hope of an honest review, a coming certainty of the realization of medical ethics, a possible exclusion of nostrum advertisements, etc. It is in this matter of reviews that the most disgraceful condition of affairs exist. The reviews in the ordinary lay-published medical journal are roaring farces, downright lies, or Pecksniffian hypocrisies. Some time ago a medical author that a publishing house was deeply interested in "booming" (because they published his books), wrote a book worse than bad; it was outrageous. No medical man would write anything but a negative or highly critical review of it. To one after another the book was given, and one after another review was not permitted to appear by the publishers, who owned body, soul and mind (if the latter two existed) of the poor invertebrate (medical?) editor, who finally had to insert in this *independent* and *scientific* journal an eulogistic review of a wretched book. How long will the profession be content to dance to such piping? Every physician who contributes gratis to a lay-published journal should stipulate that there is to be no limit set to the reproduction of the article or illustration by other publishers. The attempt to throttle professional progress by such an insane selfishness should be incontinently rebuked. Every medical writer should append a footnote and demand that there be inserted with it:

"The right of republishing this article or its illustrations is unlimited."

The JOURNAL copyrights its articles, but we have given the freest right to republish, provided only that our JOURNAL receives its proper credit.

KLEPTOMANIA AND "SHOPPING."

The case of Mrs. CASTLE (who has recently been pronounced a victim of kleptomania by the eminent English alienist, Dr. SAVAGE, and whose light sentence and speedy release demonstrate the validity of this diagnosis) renders of especial interest LACASSAGNE'S[1] recent study of the relationship of kleptomania to "shopping." Kleptomania, as a system of mental disorder, has long been recognized by alienists. MARC, who reported many cases half a century ago, recognized that people, in circumstances which should have placed them beyond temptation, stole from shops articles to them almost valueless, whose number and uselessness indicated mental disorder in the thief. According to many alienists, kleptomania is always a manifestation of degeneracy, an episodiac symptom-complex. There are kleptomaniacs of this type who steal purely for the sake of stealing. At the same time, as LACASSAGNE points out, in the vast majority of kleptomaniacs, kleptomania is a morbid manifestation of certain neuroses and psychoses rather than a psychosis by itself. In many cases of so-called kleptomania, stealing is a manifestation of viciousness or feeble morality. Kleptomaniacs steal, but not all thieves are kleptomaniacs. While the kleptomaniac impulse of stealing for the sake of stealing does occur, as a rule, determining psychologic and physiologic factors exist. Even the most seemingly absurd thefts often have secret determining causes, whose nature the thief fully recognizes. These "criminals on occasion" merit, as LACASSAGNE points out, the benefit of extenuating circumstances, for often there is no premeditation, but merely the absence of conflict with strong desire, which however is not a morbid impulse. The majority of cases of both kleptomania and these thievings, occur in the department stores. Women often steal there and there only. "Bargain" sales are hence determining factors of theft. The display fascinates the customer, provokes desire and causes an intellectual conflict which often in the strongest women leads at best to prodigal expenditure. Self-contained, economical housekeepers admit that they often succumb to temptation to waste more money than they dreamed of

[1] Jour. de Méd. de Paris, Oct. 25 1896.

spending when starting out. If such be the influence on sound women what must be the effect on pregnant, climacteric and menstruating women, hysterics, neurasthenics, morphin-users, alcoholics, invalids, senilities and other persons whose mental stability is not on a level with their social status. These "bargain" sale thieves are often no more insane than other thieves, from the delusional standpoint, but they have much less power of resisting temptation. BROUARDEL reports the case of a judge's wife who, while pregnant, stole a roast goose from a store restaurant. LEGRAND DU SAULLE has observed another judge's wife who, in a similar state, stole 300 neckties. LACASSAGNE examined a pregnant woman of the upper middle class who had stolen by dozens, pocket-books, knives, scissors, etc., which she hid away, without using, in a garret closet.

Kleptomaniacs are a vivid feature of ZOLA'S "Ladies' Paradise." Pure thieves use a pregnant woman as a shield. Three women, one pregnant, enter a crowded aisle of the "Ladies' Paradise." While the inspector is watching the pregnant woman, whom he suspects of the kleptomaniac propensities of her state, her companions steal and escape with impunity when the alarm is given, leaving the pregnant one to bear the burden and plead her state. The popular opinion of the irresponsibility of pregnant women thus shown, is of long standing. Dr. HARRIET C. B. ALEXANDER, in a paper read before the AMERICAN MEDICAL ASSOCIATION nearly a decade ago (JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, Vol. IX, p. 777) pointed out that as BEN JONSON'S plays show, Anglo-Saxon popular opinion early regarded the pregnant woman as irresponsible for her "longings." A most natural and just view, since on careful analysis of the mental condition of pregnancy, it is apparent that this is always affected by more or less morbid perturbations of the monarchic cerebral vaso-motor center, secondary to pelvic fluxionary changes, to irritative conditions, to exhaustional conditions and to pressure neuroses of cardiac, pulmonary, gastric, visceral, or peripheral neuric origins. The various "longings" of pregnancy arise from imperative conceptions either pure or dependent on perverted sensations, or from reversions to early habits of the race during reproduction. Legally, these mental states predisposed to kleptomania, either pure or resulting from a desire for possession dominating a weak will.

In many menstruating, most neurasthenic, all alcoholic, opiophagistic, hysteric, climacteric and senile women, the will is also so weakened that they are ready victims of imperative conceptions and morbid impulses.

Kleptomania appears in all great cities. London police and "go-betweens" have lists of kleptomaniacs. The "go-betweens'" lists contain about eight hundred women in easy circumstances, but very few men, a dozen at most. When a shopkeeper loses merchandise, he ascertains which of his kleptomaniac customers has visited him. He then asks the relatives by a cautiously worded circular letter, to pay for the lost article. Often the kleptomaniac has stolen nothing, but of this she is not certain and can not affirm her innocence. The relatives pay to prevent scandal. As a dozen families may pay for the same lost article, the shopkeeper profits by the theft. Mrs. CASTLE, being an American, did not appear in these lists and was treated as a mere shoplifter.

The procedure adopted in Paris is different. The offender is not stopped in the shop, since it would be easy to drop the stolen object or to say that she was going to pay for it. An inspector, plainly dressed, follows her to the street and quietly but firmly invites her either to go to the police or to return to a special room of the shop to be searched. French shopkeepers are of opinion that there are more kleptomaniacs than true thieves. They content themselves, as a rule, with compelling a restoration of the stolen articles. When an individual is detected they enforce a search of her rooms, which very frequently puts them in possession of the products of previous thefts. In Paris, out of millions of francs thus stolen yearly, but a few thousands are lost. The true thieves sell or pawn the stolen objects; the kleptomaniacs hide them away. In one case LACASSAGNE found 140 pocket-books hidden away. Paris kleptomaniacs are known to come at fixed hours. Some steal very skillfully and with incredible affrontery. One who stole bronze figures was detected only through the absurd crowding of her mantelpiece with bronze figures.

LACASSAGNE divides the "bargain" sale thieves into four types: Pure thieves, "collectors," mental instabilities and the insane. The "collectors" closely approximate ordinary thieves. Men occur much more frequently among them. They are often in easy circumstances or even rich. They steal without need and almost the same things for the pleasure of possessing them. Bibliomaniacs and other faddists can not leave a bookshop or other collection without buying. These "collectors" have the same pleasure in stealing desired objects. These people may be feeble-minded and insane, but, as a rule, merit the severity of law as much for their own sake as that of society.

The mentally unstable are those in whom the desire to take, quickly occurs and who yield without conflict. They are usually rich or in very easy circumstances. Their will weakens rapidly in the seductive surroundings of the "bargain" sale and yields readily to a motive more or less bizarre, but determining and obvious, such as vanity or coquettishness, even good sentiments. Others are seized by a vertiginous state caused by the noise and the crowd and become victims of a morbid impulse. After several yieldings to temptation they become inveterate thieves, can not

master their impulse and systematically, weekly even, they return to steal, in order to experience the same fright and intense distress in which they have a morbid delight. The desire becomes irresistible. On analyzing it they, horrified at themselves, experience the need of confiding their state to a friend. In spite of the most bizarre precautions against their penchant, they succumb. In some cases suicide then suggests itself. In other cases they find their tendency checked by legal procedures to which they voluntarily give themselves up. To settle, even from the standpoint of the patient's welfare itself, the question of punishability is therefore not easy. One woman, who bought forty dollars' worth at a department store, stole a sponge worth twelve cents. Another woman bought twelve dollars' worth and stole a three cent pocket-book for her cook. For this, she, a woman in easy circumstances, gave the following inventively stupid excuse: "I have stolen," said she, "because having bought so many things I thought this small return due me." The delusional insane are certainly irresponsible. Their thefts always present characteristic *naïveté*, puerility or morbidity.

LACASSAGNE, like BENJAMIN FRANKLIN, thinks "bargain" stores a serious social danger to the body politic. Many women who never have stolen and who would never steal elsewhere find themselves there bewitched and excited to take. It is truly a diabolic possession. In the midst of a hurrying crowd, in the odorous, overheated, wealth-suggestive atmosphere, the woman finds herself with clothing aptly adapted to hide stolen objects. At certain hours there are too few employes to serve the enormous crowd which waits its turn, touching and taking goods whose splendor and variety bewilder.

Certainty of detection would undoubtedly serve as a deterrent in many cases. As LACASSAGNE remarks, it would be better, especially for the mentally unstable women, to catch the thief rather than merely to prevent theft.

The "collector" type is as a rule perfectly responsible. "Book snatching" is a besetting vice of many bibliomaniacs, just as coin and stamp purloining attacks numismatists and philatelists.

While kleptomania in the United States is legally a defence for crime, it remains to be determined in each case whether kleptomania exist and whether it merely extenuate or completely absolve. Where states predisposing to mental instability exist, the burden of proof of sanity is on the State. In the "collectors" the burden would be on the accused. Stealing of relatively worthless articles, is, by itself, no evidence of insanity. Parisians think it "smart" to steal sugar and matches from restaurants. Not a few sane Americans think it is equally "smart" to steal rides on railroads. Deterrent influences must be carefully adjusted to each case, since, as LACASSAGNE shows, the chief object of certain women in stealing is to secure the voluptuous titillation that worry and fright over detection gives them. On the other hand certain victims of kleptomania must be held responsible if they persist in going to "bargain" stores when they have learned the danger of these to their mental stability. There is no need for new legal principles in these cases. The common law properly interpreted is, in English-speaking states, amply sufficient to protect the rights of the accused and the community.

DIPLOMA MILLS.

The *American Medico-Surgical Bulletin* in its latest issue editorially calls attention to a circular of a Milwaukee medical diploma mill that was received by a New York physician. The circular was apparently mailed from Chicago, and the *Bulletin* remarks: "If the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, edited and published at Chicago, where the above mentioned circular takes its origin, would start a crusade against this mill in the same fierce spirit that it displays occasionally when it attempts to besmirch certain of its contemporaries, it would be elevating itself to the plane where all expect to find it, and it would then rise to that high position that should be the chief aim of every scientific medical journal."

It is not the custom of the promoters of irregular and fraudulent schemes to carry on their nefarious practices in their own vicinity, as the editor of the New York publication is probably aware; the diploma mill in Milwaukee uses Chicago for a postal base and New York and other distant portions of the country for the field of its operations. Had the editor of the *Bulletin* read the JOURNAL more carefully he would have seen in the issues of April 25 and June 20, of the present year, not only that it had been noticed, but that, owing to that notice, legal proceedings had been instituted in Wisconsin for its suppression. The JOURNAL has not been remiss in the way so obviously hinted, and the insinuation is as uncalled for as is the direct charge that accompanies it. It is satisfactory, however, to learn that expectation, that requires an absolute reasonableness as a condition of its existence, is so high and universal as regards the JOURNAL.

Downright diploma mills can exist only surreptitiously in any part of the country; they have about the same standing as the green-goods manufactories that send out their temptation to crime throughout the rural districts of our country. There is another class of institutions that, while more legal and respectable, are only the more dangerous from that fact; they are the ones that, while ostensibly offering a full course of study, offer means and inducements for individuals to obtain credentials for entering the practice of medicine without proper preparation and

under false pretenses. That such institutions exist, and that they are recognized as reputable by some State boards is demonstrated, as an article in the last issue of the JOURNAL is evidence. It is not always easy to bring home the charges against these, but it is not the intention here to neglect them, or to abate in any degree the efforts for a high standard in our profession.

New York has a better medical practice act than many other States and it is reasonable to presume that it is fairly well enforced, but it is possible that the local medical journals could find abuses there that would merit their attention. The JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION is not intended to be at all a local publication, but is published for the whole country and will not knowingly spare existing evils and abuses in any section. It will gladly receive any facts that may be known that may aid in its efforts to do its part in bettering existing conditions. In acknowledging its indebtedness to the *Medico-Surgical Bulletin* for its rather belated suggestions, it regrets only that it was not offered in a more courteous manner and without the accompaniment of unjust accusations. That redoubtable publication will find food for reflection in the petition of the Attorney General of Wisconsin for the abrogation of the charter of the Wisconsin Eclectic Medical College. We may also take advantage of this occasion to announce that all circulars of this kind sent to us by members, and they have been numerous, have been promptly sent to the State officer named.

CORRESPONDENCE.

Lay Distrust of the Medical Profession.

NEW YORK, Oct. 29, 1896.

To the Editor:—Kindly allow me to make a few comments upon extracts from the editorials in the JOURNAL for Oct. 24, 1896.

"The lay world, as regards both private individuals and governments is so indifferent to or suspicious of us that while endowments, scholarships, etc., running into the millions exist for the encouragement of the study of languages, astronomy, theology, etc., yet medical education and medical students are left solely to self-interest, with almost no endowment to help what is the first necessity of human life—health and the eradication of disease."

It is not difficult to make an analysis of the situation and to arrive at a pretty clear logical deduction in explanation for this attitude of the lay world. The trouble lies within our own circle and may be divided into two chief factors.

Factor 1. Physicians guard the truth and the right so jealously that they instinctively attack all of their colleagues who are engaged in advancing the profession, because they fear the promulgation of untried doctrines. This is the working of a natural law, and it is our only means for preventing the development and spread of false and fanciful theories. We know that truth will take the resultant of opposing forces and come to the top. The men who are honestly and earnestly engaged in investigating and in lifting the mass of the profession to a higher level are quite willing to submit to attacks if they are working unselfishly and have put aside the vanity of personal feeling. The attacking party is usually composed largely of important men who have not given a subject so much attention as investigators have given it, and the lay friends of the attacking party, not comprehending the character of the contest, simply assume that the man who is advancing his profession is a pretty bad character or he would not be attacked. In the larger cities where hard headed business men often understand the situation, endowments are coming in regularly for medical educational institutions. We can point to some grand examples in New York. Millions will be given to the post graduate medical colleges in this country as soon as citizens of wealth and public spirit awaken to a realization of the fact that they can endow great charities and at the same time give the horde of busy physicians who wish to get abreast of the times, opportunities to go back to their homes equipped with newest and best methods for saving life and preventing suffering. Some of the paternal European governments give strong impulse and efficient aid to their scientific medical men. It is difficult though for laymen and governments to know whom they are to encourage, because of the known importance of men who oppose the views of leaders.

Factor 2. Physicians in their ambition to be useful and good are so jealous of any colleague who is outstripping them in good works that they fall into the careless habit of criticizing each other adversely in the presence of laymen without stopping to think of the consequences. Seven or eight physicians have perhaps heard of the old sentiment to the effect that "United we stand, divided we fall" but as these seven or eight physicians do not live in the same town they can not profit by this human experience. It requires a comprehensive type of mind and much self-culture and training to enjoy a constructive appreciation of the excellent work of one's competitors—of prophets in one's own country. There are physicians who have won this victory for their better natures, but the great majority fail in such endeavors and they attack a successful man in proportion to his success. When I am visiting a new city and wish to see good surgical work done I quietly hunt up the man who is being most abused by his confreres. The laity do not know of this trick, and if it is difficult for me to find the man in my own field whom I wish to know, how much more difficult must it be for a layman to get upon the right track.

"The opinion of the lay world is made still more plain by the facts of the oceans of patent or secret nostrums eagerly bought and devoured by it; by the long struggle still going on to obtain medical practice legislation to root out quackery, and by the audacity with which it supports medical sectarianism and quackery in the regular profession."

This again is our own fault. Elevate the standard of medical education. Help the people who are suffering and there will be no need for legislation against quacks and patent medicines. It is not quacks and patent medicines that people want. It is help for their suffering. That is what they are looking for and if the regular profession in any town can not give it they will turn anywhere for relief. I would do it myself. In the smaller towns members of the regular profession do not derogate the homeopathists a bit more than they do their own best men, carelessly if you please, but nevertheless with the effect of sending the laity over to the homeopathists freely.

"The British medical profession during the present century far from occupying a high social status has always been viewed askance by the present Queen and her uncles." This is the fault of the British physicians themselves. What a lot of them are tardigradous toadies. On more than one occasion when I have been engaged in conversation with some British physician who outranked most members of the nobility in true worth and usefulness, a prince or a duke has come into the room, and instantly my colleague's eyes would assume a distant far-away look, and his knees would give way by catalysis. I have often felt like killing the poor thing to put him out of his misery. He

was certain to be taken at his own estimate of his position. Men whom I had idealized and placed on pedestals came down within easy reach of me at sight of some prince or duke who was of no earthly account in the progress of the world and who could not even make a decent double shot on grouse. I presume that a nobleman instinctively feels like elevating such a toady by employing a method which endangers the integrity of the coccyx of the man who desires elevation.

ROBERT T. MORRIS, M.D.

Dermatitis from X Ray.

CEDAR RAPIDS, IOWA, Nov. 7, 1896.

To the Editor:—I have noted in the last two numbers of our JOURNAL references to the dermatitis produced by the Roentgen ray. Will you allow me to report a case which I know was directly referable to the X-ray, as I am the afflicted one myself.

Some seven or eight weeks ago I used my wrist in obtaining a successful skiagraph of the wrist joint three or four days in succession. The exposure was from ten to fifteen minutes each time and the ray was produced by Tesla's latent coil.

About ten days later I noticed a reddening of the skin which grew deeper until it became a purple. It was accompanied by great pain, excessive tenderness to the touch, considerable swelling and gave a perfect line of demarkation. Finally there was complete desquamation over the surface marked out at the commencement of the inflammation.

At this time, some five weeks since, the skin commenced to desquamate. I have a lesion about three inches long by two in width. The process of repair is very slow. The original lesion was about three by four and a half inches.

The best treatment I have found is the use of peroxid of hydrogen followed by a simple dressing powder such as aristol or boric acid.

I know this lesion was directly caused by the X-Ray as my wrist was not subjected to any other substance which could produce an inflammation.

Wishing our JOURNAL many years of prosperity, I remain

Respectfully yours,

G. C. SKINNER, M.D.

PUBLIC HEALTH.

Alcoholism in Children.—In addition to its effects in producing criminals, idiots and insane, alcohol arrests the growth. Children of alcoholic parents, trained to the early use of liquor, are stunted in their growth, and a French physician is inclined to ascribe to this fact the decrease in the standard of normal height shown by statistics in that country—*Bulletin de L'Académie de Méd.*, October 13.

The Decadent Birth Rate.—Maurel considers the chief cause of the decreasing natality to be the high living of the well to do classes, which induces the arthritic tendency with its lowered vitality. This is inherited by the offspring, and if they continue in the same mode of life as the parents, the natality diminishes in corresponding ratio, until the family dies out in the course of five generations of overfeeding. His ideas are founded on the statistics of his own province and elsewhere, which show that as the consumption of nitrogenous substances increases, the birth rate diminishes.—*Bulletin Médical*, October 14.

Continues Restriction of Use of Tuberculin.—Section 14 of chapter 496 of the Massachusetts Acts of 1895 is amended by act of 1896, extending until June 1, 1897, the provision that the use of tuberculin as a diagnostic agent for the detection of the disease known as tuberculosis in domestic animals shall be restricted to cattle brought into the State from points without, and to cattle held in quarantine at Brighton, Watertown and Somerville, except when the owner or person in possession consents in writing thereto, or a competent veterinarian, upon physical examination, condemns the animals as tuberculous.

To Report Accidents from Gas or Electricity.—Chapter 338 of the Massachusets acts of 1896 provides that the chief of police in any city or town and the medical examiner in any district in which a person, corporation or municipality is engaged in the business of manufacturing and selling gas or electricity for lighting or for fuel, shall make a written report to the board of gas and electric light commissioners of every accident caused by the gas or electricity manufactured or supplied by such person, corporation or municipality, whereby any person shall suffer bodily injury or loss of life or be rendered insensible, stating the time, place and circumstances of the accident. Such report shall be made by the chief of police within twenty-four hours and by the medical examiner within seven days after notice of said accident.

Can Require Removal of Dead Animals.—A city may by ordinance lawfully prescribe that unless the owner of a dead animal, even though the carcass be of some value, shall remove it, or cause it to be removed, beyond the city limits, within a specified reasonable time, and to a specified reasonable distance, the municipal authorities may deal with such carcass as a nuisance, and as such take charge of it, and make such disposition thereof as will best conserve the public health. So holds the supreme court of Georgia, in the case of Schoen v. City of Atlanta, decided Feb. 7, 1896. It is not, however, the court goes on to state, lawful to require that such owner, upon removing the carcass, or causing its removal, within the time allowed him for this purpose, shall deposit it beyond the city limits at such place only as may be designated by the municipal authorities, or that upon his refusing so to do the city will have it removed at his expense to that particular place, provided the removal intended by the owner contemplates the deposit of the carcass at some other place outside of the city not itself within a prohibited distance from the city line, and such disposition of it, when so deposited, as will in any event prevent its becoming a nuisance to, or otherwise injuring, any of the inhabitants of the city.

To Protect Health in Ohio.—Among the laws passed at the recent session of the Ohio legislature having the preservation of the public health in view, is one which provides that no dwelling or building, or any room or apartment of itself, in or connected with any tenement or dwelling or other building, shall be used, except by the immediate members of the family living therein, for carrying on any process of making any kind of wearing apparel or for the manufacture of cigars, cigarettes or tobacco goods in any form, when to be supplied to others for sale, unless such place be regarded as a workshop and made to conform to the requirements of having direct outside entrance, no opening into any living or sleeping room, sufficient light, heat and ventilation, proper water closets for each sex, and be kept in a cleanly condition. Another act deals with the manufacture of flour and meal food products. It restricts the hours of labor of employes in bakery or confectionery, prescribes as to storage of manufactured products, arrangements as to wash room, water and earth closets, drainage, plumbing, ventilation, height of walls, furniture and utensils, sleeping places, and declares that "no domestic animals, except cats, shall be allowed to remain in a room used as a biscuit, bread or cake bakery, or for the storage of floor and meal products." March 30, 1896, a new and somewhat lengthy law was passed to prevent the adulteration of vinegar. Finally, a supplement to section 6928 of the Revised Statutes of Ohio makes it a penal offense against the public health to feed to swine or animals of any kind used for human food the flesh of any old horse, or the flesh of any animal which has

become old, decrepit, infirm or sick, or of one that has died from such cause, or any offal or flesh that is putrid or unwholesome.

Boards of Health to Enforce Massachusetts Bakery Law.—A law was passed in Massachusetts, approved May 19, 1896, which provided, under penalty, that all buildings occupied as biscuit, bread or cake bakeries shall be so drained and shall be provided with such a system of plumbing as shall conduce to the proper and healthful condition thereof. Every room used for the manufacture of flour or meal food products shall have, if deemed necessary by the proper board of health, an impermeable floor constructed of cement or of tiles laid in cement, with an additional flooring of wood properly saturated with linseed oil. The side walls and ceilings of such rooms shall be plastered or wainscoted, and, if required, by said board, shall be whitewashed at least once in three months. The furniture and utensils in such rooms shall be so arranged that the furniture and floor may at all times be kept clear and in a proper and healthful sanitary condition. The manufactured flour or meal food products shall be kept in perfectly dry and airy rooms, so arranged that the floors, shelves and all other facilities for storing the same can be easily and perfectly cleaned. Every such bakery shall be provided with a proper washroom and water-closet or closets, with ventilation apart from the bakeroom or rooms where the manufacturing of such products is conducted; and no water-closet, earth-closet or closets, privy or ash-pit shall be within or communicate directly with the bake-room of any bakery. The sleeping places for the persons employed in a bakery shall be separate from the room or rooms where flour or meal food products are manufactured or stored. The board of health of a city or town in which a bakery is situated, or in which the business regulated by this act is carried on, shall enforce the provisions of the act, and shall cause copies of the same to be printed and posted in all the bakeries and places in which such business is carried on within their respective jurisdictions.

BOOK NOTICES.

A Treatise on Obstetrics for Students and Practitioners.—By Edward P. Davis, A.M., M.D. Illustrated with 217 engravings and 30 plates in colors and monochrome; cloth, pages 553. Philadelphia and New York: Lea Bros. & Co., 1896.

The practice of obstetrics has changed materially with the introduction of bacteriology. Aseptic midwifery is now the rule, and naturally all the treatises on obstetrics have to be rewritten from that standpoint, and thus the parturient woman of to-day escapes many of the accidents which were so common twenty-five years ago. The work includes chapters on obstetric diagnosis; differential diagnosis of pregnancy; the diagnosis of advanced pregnancy; the complete examination of the pregnant patient; the origin and growth of the ovum and the development of the embryo; the physiology of pregnancy; the pathology of pregnancy; normal labor and its management; labor resulting in the impaction of the fetus (impossible labor); multiple pregnancy; induction of labor; abnormal labor pains; hemorrhage before labor—concealed hemorrhage—placenta previa; eclampsia; sudden death during labor; labor complicated by disproportion between pelvis and fetus; labor in enlarged pelves; (justo-major); labor and contracted pelves (justo-minor); rachitic, flat; labor in rare varieties of deformed pelves; labor complicated by tumors of the pelvis and genital organs; septic infection; episiotomy, multiple incisions of the cervix; suture of tears of the perineum and of pelvic floor; the forceps; version and extraction; symphysiotomy, celio-hysterotomy (Cæsarean section); celio-hysterectomy, including Porro's operation; embryotomy; obstetric curettement; emptying of the uterus; abortion and premature labor; extrauterine pregnancy; the puerperal state and its complications; the repair of lacerations of cervix caused by labor; the repair of injuries to the pelvic floor and perineum; insanity and nervous disorders accompanying the puerperal state; lactation; normal infancy; the pathology of the fetus; injuries at birth; asphyxia; diseases of early infancy; incubation and artificial feeding; fetal abnormalities in size and form, monstrosities; diseases of infancy including acute dyspepsia and enteritis, dentition, the respiratory disorders of infancy; disorders of development in infancy, and tuberculosis. The jurisprudence of obstetrics include legitimacy of birth, infanticide, abortion, evidence of pregnancy in tedious child-birth, and the legal aspects of obstetric practice.

This is a carefully written book on the science and art of obstetrics and is thoroughly up to date. It is destined to become a favorite.

Diseases of the Eye. A Hand-book of Ophthalmic Practice for Students and Practitioners. By G. E. De Schweinitz, A.M., M.D., Professor of Ophthalmology in the Jefferson Medical College, etc. With 256 illustrations and two chromo-lithographic plates. Second edition, thoroughly revised. Philadelphia: W. B. Saunders. 1896.

With his well-known thoroughness the author has added a great deal of interesting new matter compiled from the recent literature, in order to keep the text-book abreast with the rapid progress of ophthalmic science. It will, therefore, deservedly continue to be a favorite guide-book among students and practitioners. But we are unable to understand how the keen-eyed scrutiny of the author could overlook a most unfortunate blunder which has crept into the chapter on the paralysis of the ocular muscles. Three illustrations are given a wrong signature and place; the illustration said to show the position of the double images in paralysis of the superior rectus, in reality represents the diplopia in paralysis of the superior oblique; while the illustration of the double images in paralysis of the superior oblique is really a representation of the diplopia in paralysis of the superior rectus; and the illustration of the double images in paralysis of the inferior rectus gives the position of the double images in paralysis of the superior rectus. These are very awkward mistakes; for even with the correct illustrations, the students generally find it pretty difficult to get a clear understanding of the subject from the w[illegible]n which the different forms of diplopia in paralysis of the ocular muscles are usually described in the text-books; but surely they will be dazed and thoroughly bewildered if the illustrations do not agree with the descriptions.

The publishers should at once try to rectify these blunders of the press room by inserting into all unsold copies an extra leaf correcting these errors, which mar an otherwise so excellent text-book.

Since writing the above we have been informed that the mistakes have been rectified in those books already bound by inserting an errata slip, and in those not yet bound by reprinting the pages and putting the cuts in their proper places. The publishers also have sent the errata slips to everybody who has purchased one of the books in which the mistakes occurred, so far as they were able to ascertain this.

Skiascopy and its Practical Application to the Study of Refraction.—By Edward Jackson, A.M., M.D., Professor of Diseases of the Eye in the Philadelphia Polyclinic and College for Graduates in Medicine, etc. Second edition, with twenty-seven illustrations. Philadelphia: The Edwards and Docker Co. 1896.

The quick sale of the first edition is the strongest indorsement of the favorable opinion we expressed on the merits of this little book one year ago. There are no material changes in the second edition; but we are pleased to note in several places slight changes in the phraseology, by which the author's ideas are expressed with greater precision and the possibility of a misinterpretation is obviated.

Charaka Samhita. Translated into English. Published by AVINASH CHANDRA KAVIRATNA. Calcutta: Printed by Girish Chandra Chakravarti (200 Cornwallis Street). Part XV.

We have before mentioned this venerable treatise, interesting not only because of its great antiquity, but to the medical historian as showing much of the ancient knowledge that is still current.

This fasciculus begins the division on Virnānam. The object of the Virnānam is to help the physician to acquire a knowledge of the tastes. The various tastes are enumerated, and Hindu dietetics is discussed as then understood. "Lesson III" in this fasciculus treats of "how the destruction of cities and towns and villages are brought about."

In the matter of gastronomy The Charaka Samhita says:

"It (food) should also consist of such ingredients as would not form a combination of hostile potencies."

"One should take one's food in a place that is agreeable."

"The food one takes should, again, consist of dishes every one of which is agreeable. One should not eat with haste; or taking up a long time; or talking or laughing the while."

"While eating one should eat with attention concentrated thereon."

"Lastly, one should eat after a proper survey of oneself" (that is, attention to one's state of general health).

In regard to plagues the book says:

"In the capital known as Kāmpilya, situated in the region called Panchāla that teemed with clusters of villages, and that was inhabited by many foremost of regenerate persons, the illustrious Punarvasu, the Son of Atri, surrounded by disciples, toward the close of the month of sweat (gharme māse), while engaged in a walk in the woods on the banks of the Ganga addressed his disciple Agniveca, and said: 'Verily, O amiable one, of the constellations, the planets, the moon, the sun, the atmosphere and fire, as also of the points of the compass, as existing in their natural state, conditions are observable causing perverse symptoms of season. From this, very soon, the soil also will not duly impart unto the herbs juice, energy, assimilable virtue and potency. Through absence of these an epidemic outbreak is certain to follow.'" Then follows a discussion of the etiology of epidemics, and it is seen that bad water occupies the first place.

Truly the world has changed little from the days of the Son of Atri, when the Sanskrit Vedas were the songs of the people not less than those of the priests.

Over the Hookah. The Tales of a Talkative Doctor. By G. FRANK LYDSTON, M.D. Illustrated. Chicago: Fred Klein Company. 1896.

Dr. Lydston's reputation as a good story-teller will be increased by the publication of this book, and those who have had the pleasure of hearing him tell a story will like the book all the better after having had that pleasure, for after all, a large part of the pleasure and charm of story-telling lies in the voice and manner of the narrator. Particularly is this true of dialect stories, where the skill of the linguist is shown not only in construction, but in orthoepy and accent. However, next to hearing Dr. Lydston tell a story, comes the pleasure of reading one that he has written or adapted, for his adaptations have a personal flavor about them that gives originality.

The hookah, be it known, is an Arabic pipe, consisting of a box in which tobacco burns, a vessel of water through which the smoke passes, and a long pliant stem or mouth tube. When the Doctor lit his hookah, the stories began.

As a rule, the author defends the profession throughout, but there are many sarcastic passages, and one might almost believe, severe hits at foibles belonging exclusively to certain well-known members of the profession. When the author's "Dr. Weymouth" is fairly launched on this subject he is very candid, sometimes caustic, but he is never dull.

The stories in the book are all character stories, and truthfully drawn. One that is absolutely new, is that of Major Meriwether, a curious compound of fuss and feathers, poverty and pride, bombast and braggadocio, egotism and simplicity, good-nature and cowardice. Dr. Lydston has made a very readable book, and if some of the stories of the frontier are rugged, it is because they are true to the characters of the mining camp, and to the rugged environment of the men themselves.

A Text-book of Special Pathologic Anatomy. By ERNST ZIEGLER, Professor of Pathology in the University of Freiburg. Translated and edited from the eighth German edition by Donald MacAlister, M. A., M.D., and Henry W. Cattell, A.M., M.D. Sections 1 to 8. New York and London: The Macmillan Co. 1896.

This is the third English edition of Ziegler, the first of which was published in 1884, but the great advances which have been made in pathology have been embodied in five German editions that have appeared in the meantime. So in this work the text has been recast to correspond to the latest German edition. The second volume, which will contain sections on the alimentary tract, liver and pancreas, respiratory and genito-urinary systems, the eye and ear, is in press and will shortly be published, after which it will be followed by a new translation of the part on general pathologic anatomy. This volume contains eight sections, as follows: 1, blood and lymph; 2, the vascular mechanism; 3, the spleen and the lymph glands; 4, the osseous system; 5, the muscles and tendons; 6, the central nervous system; 7, the peripheral nervous system; and 8, the skin.

There are 308 illustrations in this volume. The illustrations are of the style and appearance of those in Hamilton's Pathology. This work is very thorough and complete. The bibliography alone at the end of each of the paragraphs is worth to any student, writer, or other person interested in the subject, the price of the volume. The book is greatly condensed, there being no redundancy of matter or in the style of expression. It deserves wide publicity and doubtless will receive that generous support which has been accredited to former editions.

An American Text-Book of Physiology. By HENRY P. BOWDITCH, JOHN G. CURTIS, HENRY H. DONALDSON, W. H. HOWELL, FREDERICK S. LEE, WARREN P. LOMBARD, GRAHAM LUSK, W. T. PORTER, EDWARD T. REICHERT and HENRY SEWALL. Edited by WM. H. HOWELL, Ph.D., M.D. Illustrated, 1052 pages, royal octavo. Philadelphia: W. B. Saunders, and Chicago, W. T. Keener, Agt. Price (cloth) $6.

This book is published in the same general style and size as the text-book on obstetrics. It is on the collaboration method and has the natural disadvantage of the overlapping, but it undoubtedly gives a broader view than single authorship. Such works, however, can not fail to be detrimental in the long run to the interests of individual authorship, as each school represented in the book forces the book on the students of the college; consequently there is a taste of commercialism about all books written on this basis that is objectionable. We have heretofore refrained from touching on this topic, but believe the time has come for doing so, as however great the merits of the book, it is not in accordance with that freedom and liberty of action on the part of our teaching faculties that should exist in this country. This does not apply alone to the book under consideration, but refers to all works of its kind. This text-book is one of the most satisfactory of the series. It is highly scientific and free from padding, and has embodied in it the latest observations on the subject. The contents are as follows: Introduction by the editor, Dr. Howell; general physiology of muscle and nerve; secretion; chemistry of digestion and nutrition; movements of the alimentary canal, bladder and ureter; blood and lymph; circulation, respiration; animal heat; central nervous system; special senses; physiology of special muscular mechanisms; reproductions; chemistry of the animal body.

A System of Diseases of the Eye. By American, British, Dutch, German and Spanish authors. Edited by WM. F. NORRIS, A.M., M.D., CHARLES A. OLIVER, A.M., M.D., Vol. I Embryology, Anatomy and Physiology of the Eye, with 23 full page plates and 362 text illustrations. Philadelphia: J. B. Lippincott Co. 1897.

This is the first volume of a system of diseases of the eye written in the English language, and embraces the most advanced theoretical and practical views on the subject. The broad pages and large type make it a pleasure to the eye; while the beautiful illustrations are creditable alike to the author and the publishers. This is intended to be an encyclopedia on the subject of diseases of the eye and will be of service not only to ophthalmologists and special students, but for reference by the general practitioner as well. We notice with pleasure that the subjects of dioptrics, perception of light, binocular vision, have been given to Americans. It is well-known that in these subjects our countrymen have taken the lead. We notice the death of Dr. Rider, who wrote the chapter on the embryology of the eye, and who died before the issue of the volume. Professor Dwight of Harvard College has contributed an exhaustive chapter on the anatomy of the orbit and appendages of the eye; while Dr. Frank Baker of the University of Georgetown has a very scholarly article on the anatomy of the eyeball. We congratulate the editors and the publishers on the production of the first volume, and we believe that it will take its place at the very head of the extended works on this subject in English.

Water and Water Supplies. By JOHN C. THRESH. London: Rebman Publishing Co.; W. B. Saunders, Philadelphia, and W. T. Keener, Chicago, Agents. Price $2.25 net.

In this day, when the question of water supplies is interesting health officers everywhere and the public generally, this book will be peculiarly timely and interesting. Its scope includes discussion of water, its composition, properties, rain and rain water, surface water, subsoil water, natural spring water, deep well water, river water, quality of drinking water, waters, impure water and its effect upon the health, the interpretation of water analyses, the pollution of drinking water, the self purification of rivers, purification of water on a large scale, domestic purification, the softening of hard water, quantity of water required for domestic and other purposes, selection of sources of water supply, wells and their construction, pumps and pumping machinery, the storage of water, the distribution of water, the law relating to water supplies, rural and village water supplies, with an appendix.

The book will be found interesting and it is adapted to both popular and scientific reading. It is accurate in its statements and will be generally accepted by those interested as authoritative. For students and those preparing for examinations as medical officers of health we commend the book.

Text-book of Training Schools for Nurses; Including Physiology and Hygiene and the Principles and Practice of Nursing. By P. M. WISE, M.D., with an introduction by Dr. EDWARD COWLES, in two volumes, Vol. II. New York and London: G. P. Putnam & Sons. 1896.

In our notice of the first volume of this book we took occasion to commend it as being the best and most systematic text-book that has fallen under our observation, and we can only repeat the statement in glancing over the second volume, which is divided in thirty chapters, and contains thirty-eight illustrations. The chapters are as follows: 1, local applications, poultices, fomentations; 2, counterirritants, cupping, leeches; 3, enemata, suppositories; 4 and 5, bandages and bandaging, splints; 6, fractures, dislocations and sprains; 7, fever, inflammation; 8, hemorrhage; 9, wounds, burns and scalds, emergencies; 10, anesthesia and anesthetics; 11, surgical nursing operation; 12, poisons, bites, stings, etc.; 13, asphyxia, artificial respiration; 14, convulsions, apoplexy, coma, syncope, etc.; 15, nervous disorders; 16, insanity; 17, forms of insanity; 18, observations on care of the insane in the household; 19, duties of hospital nurses for the insane; 20, baths and bathing; 21, massage; 22, medicines and their administration; 23, forcible feeding, food for the sick; 24, special medical cases; 25, children's diseases; 26, convalescence, signs of death, care of the dead; 27, Pregnancy, physiologic signs and symptoms of abortion, miscarriage; 28, preparation for labor, necessity for antiseptic care, parturition, etc.; etc.; 29, care of the infant, and 30, gynecologic nursing.

In the appendix will be found a glossary of technical words and phrases and general index to the two volumes. The whole, as we have stated, form at present one of the best text-books of training schools for nurses that is on the market, in our judgment.

Text-book of Histology, Descriptive and Practical for the use of Students. By ARTHUR CLARKSON, M.D., C.M., Edinburgh, with 174 original colored illustrations. Philadelphia: W. B. Saunders, 1896. W. T. Keener, Chicago, agt. Price, $6.00 net.

This is the English imprint of the work as issued in Edinburgh, and notwithstanding the author asserts that the book being of limited size can not aspire to be of the nature of an exhaustive treatise on histology, yet it will be seen that the field is thoroughly covered, and that the work has been well done. Scotch pathologists and histologists seem to predominate among the English medical books, and it must be confessed that they have taken a high place. For students and practitioners, desiring to refresh themselves with histologic work, the book of Clarkson will be found to be a trustworthy and very satisfactory guide. Mr. Saunders has done well to introduce it to the American public.

ASSOCIATION NEWS.

Rush Monument Committee.—The following subscriptions to the Rush Monument Fund have been received:

April 17, Dr. J. W. Hoff, Pomeroy, Ohio. . .	$ 5.00
April 17, Dr. T. J. Acker, Croton-on-Hudson, N. Y.	5.00
April 30, Peoria City Medical Society (through Dr. O. B. Will), Peoria, Ill.	25.00
April 30, Dr. D. W. Cathell, Baltimore, Md..	1.00
April 30, Dr. W. T. Cathell, Baltimore, Md...	1.00
May 9, Dr. J. P. Getler and others, Mifflin County, Pennsylvania	3.00
May 21, Dr. E. H. Bishop, Towson, Md . . .	1.00
June 10, Dr. C. B. Burr, Flint, Mich	10,00
June 29, Dr. W. H. Hardin, Anderson C. H., S. C	1.00
June 29, Herkimer County Medical Society (through Dr. G. Graves, Herkimer, N. Y.).	25 00
Sept. 30, Dr. J. W. Grosvenor, Buffalo, N. Y.	1.00
Sept. 30, Interest to date.	81.00
	$ 159.00
Before reported	3,727.39
Total	$3,886.39

GEORGE H. ROHÉ, M.D., Secretary.

NECROLOGY.

JAMES BISSETT MURDOCH, M.D., of Pittsburg, late dean of the Western Pennsylvania Medical College, died October 29. He was a son of the Rev. David Murdoch, D.D., late of Elmira, N. Y., and was born in Glasgow, Scotland, Oct. 16, 1830. He was graduated from the New York College of Physicians and Surgeons in 1854, and during the ensuing year was house surgeon to Bellevue Hospital. Subsequently he became surgeon of the steamer *North Star* of the Vanderbilt line. From 1855 to 1872 he practiced at Elmira, N. Y., and since that time he has been established at Pittsburg. He was

member of the Oswego County Medical Society, its president in 1865; of the New York State Medical Society; of the Allegheny County Medical Society; of the Pittsburg Academy of Medicine and School of Anatomy, president of this society in 1877; of the Pennsylvania State Medical Society, its president in 1888, and of the AMERICAN MEDICAL ASSOCIATION. During the war he served three years in the Twenty-fourth New York Volunteers and was surgeon-in-chief of his brigade. He was a member of the Grand Army and Military Order of the Loyal Legion, a trustee of the Pennsylvania College for Women and a director of the Monongahela Navigation Company. He was a frequent contributor to the various medical journals and many of his writings have appeared from time to time in this JOURNAL. He leaves three sons and two daughters.

MORITZ SCHIFF, M.D., one of the leaders in experimental physiology, which owes many discoveries to him. Professor of Physiology at the new University of Geneva and previously at Berne and Florence. He was born at Frankfurt-on-the Main in 1823. Author of many works on his specialty, the best known are perhaps his "Physiology of the Nervous System," "Investigation of the Spinal Cord," and the "Influence of the Nervous System in the Production of Diabetes."

MISCELLANY.

Trained Nurses in the Paris Hospitals.—There are about 1,800 graduated nurses and attendants in the public hospitals of Paris, but the remainder amounting to 3,459, have never received special professional training.

Two New Buildings for the Feeble-minded.—By resolution of the Massachusetts legislature there is to be allowed and paid out of the State treasury a sum not exceeding $60,000, to be expended at the Massachusetts School for the Feeble-minded at Waltham, under the direction of the trustees of said institution, for the purpose of erecting two new buildings, in accordance with the recommendations contained in the forty-eighth annual report of such trustees.

Authorizes Holding More Property.—Any corporation hertofore chartered by the legislature of Massachusetts for any of the purposes mentioned in section 2 of chapter 115 of the Public Statutes, which includes associations formed for any educational, charitable or benevolent purpose, or for the prosecution of any scientific or medical purpose, it was enacted at the recent session of the legislature of that State, may hold real and personal estate to the amount of not more than $500,000 for the purposes set forth in its charter.

Massachusetts Pharmacy Law Codified.—Chapter 397 of the Massachusetts Acts of 1896, entitled "An act to regulate the practice of pharmacy," approved May 15, 1896, is a codification and consolidation of the laws of that State relating to the regulation of the practice of pharmacy and of all the laws which it is the duty of the board of registration in pharmacy to enforce, which were previously scattered through half a dozen or so different volumes.

Sphacelotoxin, the Active Principle of Ergot.—Jacoby of Strassburg announces that he has succeeded in isolating the active principle of ergot. It forms a yellow crystalizing substance, chemically pure, which produces abortion in dogs and cats in twenty-four hours, without severe general symptoms. It also decreases the laying of eggs by hens. No poisonous effect is produced on warm blooded animals, even in very large doses.—*Wien. klin. Rundschau*, October 18.

Impotence in Law.—Under the Illinois statute which provides that where a marriage has been contracted, and it shall be adjudged, in manner prescribed, that either party, at the time of such marriage, was and continues to be naturally impotent, the injured party may obtain a divorce, the supreme court of Illinois holds, in the case of Griffith v. Griffith, where it denied a re-hearing Oct. 9, 1896, that where the defect in the husband proceeds from self-abuse, if he will not exercise a moral restraint over himself, and test the curability of his disorder by proper self-control, his wife has a right of action on the ground of impotence. The words "naturally impotent," as used in the statute, the court holds, means "incurably impotent," and that it is immaterial whether the impotence existed at birth and by some formation or nonformation of nature, or was caused by the party's own fault, so long as it exists at the date of the marriage.

The History of Surgery in Tableaux.—At the twenty-fifth meeting of the German Surgical Society, lately held, after the reading of many highly meritorious papers by the most eminent surgeons, an entertainment was given, at which the Emperor and Empress were present. It consisted of a series of tableaux which represented the history of surgery. The first represented the battle of Teutobruger Wald, showing how the place looked when the soldiers' wounds were dressed on the battlefield. Then came the monk, the quack and the barbers as healers, and so on, following the course of surgery down to to-day, and the final picture was in honor of the Red Cross.

Alleged Wrong Flexion.—In an action to recover from a railroad company for personal injuries, which it was alleged, resulted in a retroflexion of the womb, while the proof established an anteflexion, the defendant argued that a verdict should have been directed for it, on account of this variance. But the court of appeals of Indian Territory holds otherwise, case of Missouri, K. & T. R'y Co. v. Turley, decided Sept. 9, 1896, saying that the company having offered no proof that it was misled, the alleged variance, if, indeed, it could be so termed, must be regarded as harmless, and treated as immaterial.

Non-Expert Evidence of Insanity in New Mexico.—The supreme court of New Mexico holds, in the homicide case of Territory v. Padilla, decided Sept. 1, 1896, that it was competent for a non-expert to testify that the demeanor of a witness, whose sanity was attacked, was similar, as nearly as he could remember, at the coroner's inquest and before the jury in the trial in the district court, and that he was considered by him a very stupid witness, and uncertain as to the facts he stated; that non-expert witnesses can be asked as to conduct and appearance; but that they can not give an opinion as to the sanity or insanity of a person; and can not testify as to what is his general reputation as to sanity. At the same time, two of the justices dissent from the doctrine that a non-expert may not state his opinion or conclusion as to the sanity or insanity of a person whose mental soundness or capacity is under consideration.

Restrictions upon Evidence of Attending Physicians.—The court of appeals of New York holds, in the case of Redmond v. Industrial Benefit Association, decided Oct. 6, 1896, where an insurance company's by-laws required the proofs of death to contain, among other things, a statement, under oath, of the attending physician, made upon a blank furnished by the company, and such statement showed that he had treated the insured for renal calculi some months prior to the time application was made for the insurance, that it was evidence, but not conclusive evidence, of disease of the urinary organs when the application was made, or within five years prior thereto. It also holds that the testimony of the physician to prove this fact at the trial of the action against the insurance company was properly excluded under section 834 of the Civil Code, as privileged.

Not Hearsay Evidence.—The supreme court of Georgia holds, in the case of the Western & Atlantic Railroad Co. v. Stafford,

decided July 27, 1896, that there was no error in allowing a physician to testify that one who had received violent personal injuries, and who was under treatment in a boarding house on the day upon which he was hurt, did not know he had previously, on the same day, after receiving the injuries, been in the physician's office. The objection to this testimony was that it was simply the sayings of the plaintiff, who was seeking to recover for his injuries, made some five hours after the occurrence and too far off to be a part of the occurrence. But the court takes the above view, it not appearing on cross-examination or otherwise, that the physician's knowledge on the subject was not derived from personal observation of the patient's condition, or that it depended solely upon statements made by the latter.

Esophageal Sac or "Antrum Cardiacum."—Fleiner, Boas and Ewald have observed in a few cases a cavity above the stomach in the alimentary canal. One patient could only swallow his food by filling the esophagus to the top, and then by pressure from the outside force the contents down into the stomach. Others have required the permanent use of the sound. If the stomach is filled with melted wax after dissection, it often reveals the presence of an ante-stomach, with no evidence of a previous cicatrization. The symptoms in the case of an 8 year old child were distress in breathing, pain in the gastric region, vomiting, regurgitation and eructation after or during meals, with a peculiar cough at night and a gurgling sound in the chest. The child masticated slowly, ate very little, and was much emaciated. Alimentation with the sound caused it to gain five pounds in ten days. Investigation with the sound disclosed a cavity above the stomach that contained 70 c.m. fluid. The trouble in this case is congenital and will probably require the continual use of the sound for life.—*Wiener klin. Rundschau*, October 27.

Examination and Evidence in Personal Injury Case.—The supreme court of Georgia says that it w not reverse the action of a trial judge in refusing, pending thc rial of a suit for personal injuries, to order a medical examination of the plaintiff, when it appears that no request for such on examination was made of the plaintiff before the trial began, and no request to this effect was made to the court until after the plaintiff's evidence had been closed and it was then impracticable, without too long a suspension of the trial, to obtain a satisfactory and competent physician by whom an impartial examination could be then made. While the power to order such an examination exists, it goes on to state that it is in each case to be exercised or not, according to the sound discretion of the presiding judge. And the court also holds, Savannah, F. & W. Ry. Co. v. Wainwright, decided July 20, 1896, that while a husband is not competent to testify as to oral complaints made to him by his wife concerning her "pains and hurts" resulting from a physical injury, he may testify as to the physical condition of any of her members of which he had actual knowledge; and, if such condition manifestly caused suffering, he may so state.

Colorado Inebriate Law Constitutional.—The supreme court of Colorado holds, "In re House," a case decided June 29, 1896, that chapter 74 of the State session laws of 1895, which provides for the sending of indigent habitual drunkards to an institution for treatment at county expense is constitutional, thus reversing the decision of the county court. Among the chief objections raised was that it offended against a provision of the State constitution that: "No appropriation shall be made for charitable, industrial, educational or benevolent purposes, to any person, corporation or community not under the absolute control of the State, nor to any denominational or sectarian institution or association," as well as that it offended against a provision that: "The general assembly shall not delegate to any special commission, private corporation or association, any power to make, supervise or interfere with any municipal improvements, money, property or effects, whether held in trust or otherwise, or to levy taxes, or perform any municipal function whatever." But after carefully considering these, and other constitutional objections, which it says were ably and exhaustively urged, the supreme court declares that, while the act may in some respects be defective, and subject to some criticism, it is not objectionable to any of the constitutional objections urged, and must be upheld as a legitimate exercise of legislative power.

The Demand and Supply of Eunuchs in China.—A writer in the London *Lancet* gives us some information upon the above subject. In China the Emperor and certain members of the royal family are alone entitled to keep eunuchs. His majesty maintains at least 3,000, but no prince of the blood or imperial princess has a right to more than thirty. Theoretically the palace eunuchs are furnished by governors of provinces, each of whom has to supply eight every five years, receiving in return 250 taels per eunuch. It was found, however, that the number thus obtained was totally insufficient, so a recruiting office was established at Pekin for the direct enrollment of candidates. In the production of Chinese eunuchs four chief factors prevail, viz., greed, predilection, poverty and laziness. Many parents sell ther male children to the mutilators or themselves castrate them in the hope of eventually sharing their earnings.

Young men of from 25 to 30 years of age, some of them having wives and families, often accept emasculation, being allured by the prospects of emolument. Poor wretches destitute of means and threatened with starvation agree to become eunuchs in order to gain a living. Finally, a certain number of lazy, good-for-nothing vagabonds sacrifice their manhood to secure a life of indolence. The operation is performed in a building situated close to one of the palace gates, but the operator, although his office is recognized and a hereditary one, having been for many years in the same family, receives no regular wages, being entitled to a fee of 6 taels from each individual operated on. In the case of destitute candidates he exacts a lien on their prospective earnings. Dr. Matignon's description of the operation is as follows: The subject, with his abdomen and thighs tightly bandaged, is placed supine on a low bed, one assistant tightly grasping him around the waist, while two more keep his legs widely separated. The operator, as a rule, uses a curved implement resembling a pruning knife, but occasionally he substitutes for it a long pair of scissors. With his left hand he seizes the parts, squeezing and twisting them to diminish the supply of blood; but before cutting he inquires for the last time whether or not the patient is a consenting party. Adults, of course, answer for themselves, no anesthetic being used, but in the case of children the parents' word is accepted. The reply being in the affirmative, a single rapid sweep of the hand serves to remove both penis and scrotum, the blade of the instrument passing as close as possible to the pubis. A small piece of wood or of pewter shaped like a nail is then inserted into the urethra; the wound is washed two or three times with pepper and water, and several sheets of paper having been applied to the raw surface the parts are carefully and tightly bandaged. The subsequent treatment is remarkable. Immediately after the bandaging the unfortunate patient is seized by the assistants and made to walk up and down the room at a rapid rate, not being permitted to lie down for three hours. For three days he is not allowed to drink anything, and not only does he suffer the pangs of thirst, but also has to endure the agonies of retention owing to the plug in the urethra. On the fourth day the bandages are removed and the wretched creature is suffered to pass urine if he can. If the urine flows he is looked upon as cured, but should the overstrained bladder refuse to act he is left to die, the virtues of catheterization being apparently unknown to the Chinese. The amputation leaves a large triangular wound with the apex downward, which takes on an average about a hundred days to granulate. Notwithstanding the primitive mode of procedure the operation is usually successful, and fatal cases do not amount to more than 3 or 4 per cent. The most frequent complication is the incontinence of urine, but if this unpleasant symptom continues beyond a reasonable period the patient is condemned to flagellation, a mode of treatment which is said to yield the most excellent results.

The Gradual Evolution of the Ambulance.—In Boston, a somewhat novel departure has been put forth in the way of furnishing stretchers for the fire department employes. It is expected that these means of relief will often be used at fires, before the police patrol wagons or the city ambulances can reach the scene. The instrumentality of the late Dr. Henry I. Bowditch in bringing into play the humane idea of the ambulance has been sketched in an article in the *Independent*. A portion of that article is given below. Quite recently, the French Army Ambulance service has been holding some very interesting maneuvers, just outside of Paris; and we may be sure that the people who had sons and brothers falling ill by the hundreds in malarious Madagascar, watched these evolutions with keen interest. A train was prepared for imaginary "sick and wounded," and was fitted up by the men of the ambulance corps. It was taken to a suitable site, and a field hospital was improvised, in which the invalids were distributed according to the nature and severity of their imaginary injuries. It was supposed that night would test the drill and discipline better than the day, and accordingly, it was chosen, and surgeons went their rounds, while the subordinates prepared suitable food for invalids. "Then the 'patients'—who enjoyed it all as a huge and elaborate joke—were conveyed on stretchers and in ambulances to their barracks, and the 'ambulance drill' was over. There is in existence, somewhere, a little pamphlet put forth during the War of the Rebellion, by Dr. Henry I. Bowditch of Boston, who had hastened to one of the battle-fields of Virginia, on learning that a beloved son was wounded. He describes the horrors of a ride in a common springless farm wagon—the only procurable vehicle—with a number of severely wounded men, over the rough ways that served for roads. The sufferings of these men were terrible; and the sound of their groans and shrieks was destined to be heard far beyond the time and place rendered indescribably horrible by them. The soul of the good doctor was filled with compassion, and on his return, with his dead son, he at once set to work to ameliorate the conditions that must follow every battle. He strove to invoke the aid of Massachusetts, and the history of that attempt is enough to make one loathe the word 'politics,' so much did they do to obstruct and thwart a purely humane purpose; but untiring zeal, quickened by the memory of that awful night ride, at last accomplished an improvement in the means of conveyance and also the selection of a detail of drivers who were not—like the one he had known—drunken, profane and brutal. Some of the ideas embodied in the comfortable ambulances that now follow in the wake of civilized warfare (if there can be such a thing as *civilized* war), and that one found in all large cities as part of the paraphernalia of a well-equipped hospital, were embodied in 'sick wagons' before the close of the war; and when it was over the matter was forgotten, and one quick, observant mind after another added its full quota of 'improvement' till it seemed to have touched the ideal; but within a few months the last desideratum has been attained in the addition of rubber tires to the wheels that must travel over the uneven city pavements. Wherever an army corps goes into action now, it is sure to be followed by a train of these life and pain-saving vehicles, with the red cross of universal care for the wounded sending forth its message of hope and comfort."

Marching from Malaria.—For several years back, during the autumn, the troops stationed at Fort Myer, Va., have suffered severely from intermittent and remittent fevers. In July of the present year the post surgeon, Capt. W. H. Arthur, recommended that a practice march be made, for military purposes so far as the military point of view was under consideration, but for medical purposes as well, so as to remove the troops to non-malarious localities during the season of active infection at Fort Myer. The recommendation was approved by the higher authorities and the command, consisting of four troops of the Sixth Cavalry and a detachment of the band, with Capt. Arthur and some men of the hospital corps, left the post September 8, and returned, after a march of 260 miles through northeastern Virginia, on October 5. Their route took them through Warrenton, Sperryville, Strasburg, Winchester and Harper's Ferry. Good camping grounds were found at all points selected, with plenty of running water, usually of excellent quality. A few cases of malarial fever occurred during the first week, none afterward. The total number of cases was 8 in the command of 220 men. The sick report showed 12 cases during the same period among the 80 men left behind in garrison. In the corresponding period of 1895, 88 cases occurred in the Fort Myer command, then 268 strong. These results are regarded as highly satisfactory. The command will no doubt have fewer cases of recurring malarial fever during the coming winter.

THE PUBLIC SERVICES.

Army Changes. Official List of changes in the stations and duties of officers serving in the Medical Department, U. S. Army, from Oct. 31 to Nov. 6, 1896.

Major Edward B. Moseley, Surgeon U. S. A., is granted leave of absence for four months, to take effect upon being relieved from duty at Ft. Monroe, Va.

PROMOTIONS.

To be Asst. Surgeons with rank of Captain after five years' service: First Lieut. Henry C. Fisher, Asst. Surgeon, Oct. 31, 1896, First Lieut. Henry A. Shaw, Asst. Surgeon, Oct. 31, 1896; First Lieut. Charles F. Kieffer, Asst. Surgeon, Oct. 31, 1896.

Navy Changes. Changes in the Medical Corps of the U. S. Navy for the week ending Nov. 7, 1896.

Medical Inspector A. Neilson, detached from the "Maine" Nov. 10, and placed on waiting orders.

Surgeon L. G. Heneberger, ordered to the "Maine" Nov. 10.

D. N. Carpenter and F. L. Pleadwell, appointed Asst. Surgeons from Oct. 24.

Surgeon G. P. Lumsden, detached from the "Yorktown" Nov. 9, ordered home and granted three months' leave.

P. A. Surgeon J. E. Page, detached from the "Boston" and ordered to the "Yorktown."

P. A. Surgeon G. Rothganger, detached from the "Oregon" and ordered to the "Patterson."

P. A. Surgeon R. M. Kennedy, detached from the "Patterson," ordered home and granted three months' leave.

Asst. Surgeon E. S. Blakeman, detached from the "Vermont" Nov. 12 and ordered to the "Boston" per steamer of Nov. 21.

Asst. Surgeon W. M. Wheeler, detached from the "Franklin" Nov. 12 and ordered to the naval hospital, Mare Island.

Asst. Surgeon A. Farenholt, detached from the Mare Island naval hospital and ordered to the "Oregon."

Asst. Surgeon S. B. Palmer, detached from the naval laboratory, New York, and ordered to the "Vermont."

Asst. Surgeons D. N. Carpenter and F. L. Pleadwell, ordered to the naval laboratory and department of instruction, New York.

Change of Address.

Brown, J. R., from 102 N. Alabama St. to 8 Sterling St., Indianapolis, Ind.
Craig, S. S., from Alamosa, Colo. to Chama, N. M.
Ewing, F. C., from St. Louis to Webster Grove, Mo.
Hammond J. C., from Dennison, Iowa, to Hanna, Wyo.
Luebbers, A., from Denver, Colo. to 2407 N. Jefferson Av., St. Louis, Mo.
Mass. F., from 25 Miami Av. to 564 Woodward Av., Detroit, Mich.
Montizambert, F., from Quebec to 130 St. George St., Toronto, Canada.
Murrell, T. E., from St. Louis, Mo. to 2224 E. 14th Av., Denver, Colo.
Marshall, John S. from Kankakee, Ill. to Elyria, Ohio.
Potts, C. N., from Silverton to 605 N. Cascade St., Colorado Springs, Colo.

LETTERS RECEIVED.

Alta Pharmacal Co., (2) St. Louis, Mo.
Bishop, Louis F., New York N. Y.; Breedlove, J. W., Fort Smith, Ark.; Brockway, Geo. M., Florence, Ariz.; Breiteenbach, M. J., Company, New York, N. Y.; Bausch & Lomb Optical Co., Rochester, N. Y.
Columbus Phaeton Co., Columbus, Ohio; Curtis, John B., Somerville, Mass.; Cornell, C. W., Knoxville, Iowa.
Davidson Rubber Co., Boston, Mass.
Farwell & Rhines, Watertown, N. Y.; Ferguson & Goodnow, Chicago, Ill.; Freeman, C. A. Chicago, Ill.; Floyd, J. C. M., Steubenville, Ohio.
Gilpin, Langdon & Co., Baltimore, Md.
Hendrick, S. O., Henry, Ill.; Haldenstein, I., New York, N. Y.; Hummel, A. L., Advertising Agency, New York, N. Y.
Jay, E. W., St. Anthony, Iowa.
Knight, T. H., Nice, France; Kirkpatrick, Paul W., Nashville, Tenn.
Lee, Elmer, Chicago, Ill.
Mackie, J. M., Portage La Prairie, Manitoba, Canada; Mellier Drug Co., St. Louis, Mo.; Murphy, T. C., Manito, Ill.; Montgomery, E. E., Philadelphia, Pa.
Norbury, Frank P., St. Louis, Mo.
Oakland Chemical Co., New York, N. Y.; Oswald, B. Frank, Cleveland, Ohio.
Physicians' Periodical Bureau, Janesville, Wis.
Reed, R. Harvey, Columbus, Ohio; Rabuck, S. H., Lyle, Minn.
Seeds, E. W., Columbus, Ohio; Schwartz, J., New York, N. Y.; Stewart, O., Fort Huron, Mich.; Spencer, J. C., San Francisco, Cal.; Shuttee, H. C., West Plains, Mo.; Stallman & Fulton, New York, N. Y.; Stockwell, G. Archie, Detroit, Mich.
Tiemann, George & Co., New York, N. Y.; Thomas, John D., Washington, D. C.
Von Ruck, Carl, Asheville, N. C.